HEALTH SCIENCES LIBRARY
UNIVERSITY OF MARYLAND
BALTIMORE

Digitized by the Internet Archive
in 2015

https://archive.org/details/delawaremedicalj3911medi

Delaware
Medical Journal

Official Publication of the Medical Society of Delaware

1925 Lovering Avenue, Wilmington, Delaware 19806

ROBERT B. FLINN, M.D.
Editor

MELITA A. PHILLIPS
Assistant Editor

A. HENRY CLAGETT, JR., M.D.
Honorary Editor

WILLIAM J. HOLLOWAY, M.D.
JOSEPH W. ABBISS, M.D.
DAVIS G. DURHAM, M.D.
B. Z. PAULSHOCK, M.D.
Associate Editors

ANNE E. SHANE
Business Manager

M. A. TARUMIANZ, M.D.
Honorary Managing Editor

VOLUME 39

1967

HEALTH SCIENCES LIBRARY
UNIVERSITY OF MARYLAND
BALTIMORE

DELAWARE MEDICAL JOURNAL

INDEX – PART 1

TEXT TITLES

Volume 39 January-December 1967

A

Adrenalectomy, Cushing's Disease Treated by Bilateral Total, Richard A. Kahlbaugh, M.D., x 292
Adult Stature, Prediction of, Bernadine Z. Paulshock, M.D., ii 39
Ampicillin in the Treatment of Bacterial Infections of the Respiratory Tract, William J. Holloway, M.D., (E. G. Scott, M.S.) i 1
Antipyrine Poisoning, Neurological Manifestations of, Dewey A. Nelson, M.D., (Richard G. Berry, M.D.) iii 57

B

Battered Child Syndrome, The, W. Scott Bolz, M.D., vii 176
Beach, Report from the, Reviews of Papers, Meeting of the American Society for Clinical Investigation and the American Federation for Clinical Research, vi 159
Blood, Analysis of Respiratory Gases in, James M. Hofford, M.D., x 276
Bronchoscopes, Two Ventilating Attachments for, R. Douglas Sanders, M.D., vii 170

C

Child Diagnostic and Development Center (Letters to the Editor), Henry H. Stroud, M.D. iii 73
Children, Inguinal and Hydroceles in Infants and, Charles L. Minor, M.D., iv 85
Cirrhosis, Laboratory Findings in Hepatic, Ralph M. Myerson, M.D., ii 50
Clinicopathological Conference, Wilmington Medical Center, v 114
Code of Conduct and Practice, Interprofessional, Report for Action Submitted by the Joint Committee for Medical Legal Affairs, i 11
Coronary Embolism with Survival, Case Report, William T. Hall, M.D., v 125
Cushing's Disease Treated by Bilateral Total Adrenalectomy, Richard A. Kahlbaugh, M.D., x 292

D

Delaware Academy of General Practice
  1966 Annual Meeting i 20
  The Family Physician, Henry F. Wendel, M.D., iii 78
  How Can We Stop This? Rhoslyn J. Bishoff, M.D., iv 109
  State Officers Annual Meeting, AAGP v 133
  Utilization vii 190
  Program of Seminar Series in General Medicine viii 218
The AAGP Convention xii 363
Delaware Board of Health
  Rabies Prophylaxis vii 213
  Current Immunization Practices ix 238
Diabetic-Clinic Patient, The Marvin H. Dorph, M.D., xi 335
Diabetes Detection Drive in Delaware xi 336
Diabetes Detection, Why Wait, Edward M. Bohan, M.D., v 132
Dosage Form in Humans, Use of Radioactive Tracer to Study a Sustained Release, Indications, Modalities and Limitations William R. Ebert, Ph.D., (Robert W. Morris, M.D.), (Robert L. Bogner, Ph.D.) vi 152
Diabetes Mellitus, What are the Criteria for the Diagnosis of, Lewis B. Flinn, M.D., xi 321

E

Editorials (Robert B. Flinn)
  Publish or Perish i 23
  Regional Planning iii 77
  Responsibility of the Profession iv 107
  Third Factor v 113
  The Case Against the Osmometer vi 141
  The Role of the Modern Emergency Room vii 169
  The Role of the State Medical Journal viii 197
  An Answer for Obesity ix 231

X68-414

The Value of a State Medical
Journal (1911) xi 332
The Regional Medical Program xii 364

F

Familial Hyperlipemia, Pancreatitis due to,
Case Report, Mark G. Cohen, M.D., v 128

G

Glandular Gleanings,
Bernadine Z. Paulshock, M.D., viii 211
Guest Editorials
The Stepchild in the Physician's Armamentarium, O. N. Stern, M.D., ii 29
Graduate Medical Education,
Lemuel C. McGee, M.D., ii 30
A New Breed of General Practitioner,
David Platt, M.D., ii 31
L.B.F., Lemuel C. McGee, M.D. x 257
L.B.F., Gerald A. Beatty, M.D. x 258
Personal Reflections,
Ward W. Briggs, M.D., x 260

H

Haemophilus Influenza
Richard D. Pullen, M.D., x 309
Health Care, Highlights of the First
National Congress of the Socio-Economics of,
Allston J. Morris, M.D. iii 68
Hepatic Cirrhosis, Laboratory Findings in,
Ralph M. Myerson, M.D., ii 50
Hernia, Surgical Treatment of
Esophageal Hiatus,
David M. Sensenig, M.D.
(Melvin H. Sher, M.D. i 6
Hexanicotol* (Inositol Niacinate) in
Peripheral Vascular Disease, The Use of,
Arthur J. Heather, M.D. ii 33
Hirsutism: Diagnosis and Management,
Bernadine Z. Paulshock, M.D. x 267
Hydroceles in Infants and Children, Inguinal
Hernias and, Charles L. Minor, M.D., iv 85
Hyperthyroidism, Low Dose Therapy of,
U. P. Tezcan, M.D.,
(Robert W. Frelick, M.D.),
(Robert L. Meckelnburg, M.D.) vi 142
Hypoglycemia, Spontaneous,
James F. Flanders, M.D., x 286
Identity, The Case of Mistaken,
A Cause for Marital Conflict,
Sheldon W. Weiss, Ph.D. iv 99

I

Infant Maintenance Program, Delaware's,
Edward F. Gliwa, M.D.,
(Harold J. Horoho) ix 249
Influenza, Haemophilus,
Richard D. Pullen, M.D., x 309
Inguinal Hernias and Hydroceles in
Infants and Children,
Charles L. Minor, M.D. iv 85
Intermittent Porphyria, Landry's Ascending
Paralysis in Acute,
Edward S. McCabe, M.D. iv 94
Iron Intoxication, Acute, Case Report,
Edwin C. Katzman, M.D.,
(Arthur Burke, B.Sc.), xi 317

J

Job Satisfaction, Effects of Participation
upon Self Evaluation and,
Searles A. Grossman, Ph.D.,
(Harry Kaufmann, Ph.D.) iv 102

L

Landry's Ascending Paralysis in
Acute Intermittent Porphyria,
Edward S. McCabe, M.D. iv 94
Letters to the Editor
Henry H. Stroud, M.D., iii 73
William H. Duncan, M.D., xi 325
Robert W. Frelick, M.D., xi 326
Herman Rosenblum, M.D., xi 327
Lewis B. Flinn, M.D. xii 365
Barbara Rose, M.D. xii 365
Listeria Monocytogenes, Meningitis due to,
Case Report, Charles Allen, M.D., vii 181
Lumbar Disc Lesion, Trauma and the,
Post Traumatic Sequelae
Joseph A. Arminio, M.D. viii 198

M

Medical Society of Delaware
Officers and Committees, 1966-1967 v 140
Annual Meeting Program, 1967 ix 225
Woman's Auxiliary, Annual Meeting
Program ix 227
Exhibitors, Annual Meeting ix 228
Officers and Committees, 1966-1967 ix 229
President's Address to the Medical
Society of Delaware xii 341
Health Facilities Planning Council xi 328
Proceedings of the House of
Delegates, 1967 xii 342
New Members iii 76
Medicare Program, Past-Present-Future,
William O. LaMotte, Jr., M.D., xi 313
Mediterranean Fever, Familial,
William Vandervort, M.D., x 306
Meningitis Due to Listeria Monocytogenes,
Case Report, Charles Allen, M.D., vii 181
Methacycline in the Treatment of Urinary
Tract Infections
W. J. Holloway, M.D., (R. A. Kahlbaugh,
M.D.), (E. G. Scott, M.S.) ix 245
Methadone in the Relief of Pain,
Robert W. Frelick, M.D., x 297
Myocardial Infarction During Thyrotoxicosis, Crawford F. Barnett, Jr., M.D.,
(Leon C. Anderson, M.D.)
(J. Richard Durham, M.D.) iii 64
Myoglobinuria, Acute Idiopathic Rhabdomyolysis with, Alfred E. Bacon, Jr., M.D., x 302

N

Nitrofurantoin, Pulmonary and Eosinophilic Reaction to, Allston J. Morris, M.D., x 299
Nosocomial Infection, William J. Holloway, M.D., (E. G. Scott, M.S.) x 263
Nursing, Public Health, in Delaware Mary C. McQuade, R.N., ix 241

P

Pancreatitis and Renal Vein Thrombosis Presenting as Diabetic Coma, Mark G. Cohen, M.D., i 15
Pancreatitis due to Familial Hyperlipemia, Case Report, Mark G. Cohen, M.D. v 128
Pericarditis with Tamponade, Acute Non-Specific, Marvin H. Dorph, M.D. x 279
Peripheral Vascular Disease, The Use of Hexanicotol* (Inositol Niacinate) in, Arthur J. Heather, M.D., ii 33
Physician and the Challenge of Sex Education, Eugene B. Linton, M.D. viii 205
Physician in Sex Education, The Role and Responsibility of the, S. Leon Israel, M.D., ii 45
Poisoning, Neurological Manifestations of Antipyrine, Dewey A. Nelson, M.D., (Richard G. Berry, M.D.) iii 57
President's Page (H. Thomas McGuire, M.D.)
  Health Facilities Planning Council, Inc., i 21
  Ferment in Medicine ii 53
  Comments on H. R. 5710 iii 75
  Thoughts on Occupational Health Orientation iv 105
  Physician Involvement in Health Facility Planning v 131
  Legislation for Loans to Voluntary General Hospitals vi 165
  Notes on the Activities of the AMA, House of Delegates Meeting, June 18-22, 1967 vii 188
  Some Comments on Rights and Privileges x 312
  Thoughts on Health Careers (Daniel J. Preston, M.D.) vi 333
  The State Legislature and Medicine (D. J. Preston, M.D.) xii 362
Pulmonary and Eosinophlic Reaction to Nitrofurantoin, Allston J. Morris, M.D. x 299

R

Radiation Therapy, Carlo A. Cuccia, M.D. vi 147
Radioactive Tracer to Study a Sustained Release Dosage Form in Humans, Indications, Modalities and Limitations William R. Ebert, Ph.D., (Robert W. Morris, M.S.), (Robert L. Bogner, Ph.D.) vi 152
Renal Vein Thrombosis Presenting as Diabetic Coma, Pancreatitis and, Mark G. Cohen, M.D., i 15
Respiratory Gases, A Simplified Method of Analysis of, James M. Hofford, M.D., (Howard P. Angstadt, Ph.D.) x 272
Respiratory Tract, Ampicillin in the Treatment of Bacterial Infections of the, William J. Holloway, M.D., (E. G. Scott, M.S.) i 1
Rhabdomyolysis with Myoglobinuria, Acute Idiopathic, Alfred E. Bacon, Jr., M.D., x 302

S

Salicylate Ototoxicity, Recent Animal Contributions to the Study of, Chester Wilpizeski, Ph.D., (Yoshisato Tanaka, M.D.) iv 90
Sex Education, The Physician and the Challenge of, Eugene B. Linton, M.D., viii 205
Sex Education, The Role and Responsibility of the Physician in, S. Leon Israel, M.D. ii 45
Self-Evaluation and Job Satisfaction, Effects of Participation upon, Searles A. Grossman, Ph.D., (Harry Kaufmann, Ph.D.) iv 102
Social Security Disability Program Means to You and Your Patient, What the, Martin B. Pennington, M.D. vii 184
Surgical Treatment of Esophageal Hiatus Hernia, David M. Sensenig, M.D., (Melvin H. Sher, M.D.) i 6

T

Tamponade, Acute Non-Specific Pericarditis with, Marvin H. Dorph, M.D., x 279
Thyrotoxicosis, Myocardial Infarction During, Crawford F. Barnett, Jr., M.D., (Leon V. Anderson, M.D.) (J. Richard Durham, M.D.) iii 64
Trauma and the Lumbar Disc Lesion, Post Traumatic Sequelae, Joseph A. Arminio, M.D. viii 198
Tuberculosis Control in Delaware, Frank F. Pierson, Jr., (Thomas D. Peace) ix 236
Tuberculin Skin Testing, With Specific Reference to the Tine Test, Nathaniel Young, M.D., ix 235

U

Urinary Tract Infections, Methacycline in the Treatment of, W. J. Holloway, M.D., (R. A. Kahlbaugh, M.D., E. G. Scott, M.S.) ix 245

V

Venereal Diseases, Education has Vital Role in Correcting Misconceptions about, Winder L. Porter, M.D., (John W. Gray) ix 232

Z

Zieve's Syndrome, A Case Report, Charles Allen, M.D. viii 207

DELAWARE MEDICAL JOURNAL

INDEX – PART 2

AUTHORS

Volume 39 January-December 1967

A

Allen, Charles, M.D.,
Meningitis Due to Listeria Monocytogenes, vii 181
Zieve's Syndrome, Case Report viii 207
Arminio, Joseph A., M.D.,
Trauma and the Lumbar Disc Lesion, Post Traumatic Sequelae viii 198

B

Bacon, Alfred E., Jr., M.D.,
Acute Idiopathic Rhabdomolysis with Myoglobinuria, x 302
Barnett, Crawford F., Jr., M.D.,
(Leon V. Anderson, M.D.)
(J. Richard Durham, M.D.)
Myocardial Infarction During Thyrotoxicosis, iii 64
Beatty, Gerald A., M.D.,
L. B. F., Editorial x 258
Bishoff, Rhoslyn J., M.D.,
How Can We Stop This? (DAGP) iv 109
Bohan, Edward M., M.D.,
Why Wait, Diabetes Detection v 132
Bolz, W. Scott, M.D.,
The Battered Child Syndrome vii 176
Briggs, Ward W., M.D.,
Personal Reflections, Editorial x 260

C.

Cohen, Mark G., M.D.,
Pancreatitis and Renal Vein Thrombosis Presenting as Diabetic Coma, i 15
Pancreatitis due to Familial Hyperlipemia, Case Report, v 128
Cuccia, Carlo A., M.D.,
Radiation Therapy vi 147

D

Dorph, Marvin H., M.D.,
Acute Non-Specific Pericarditis with Tamponade, x 279
The Diabetic-Clinic Patient xi 335
Duncan, William H., M.D.,
Letters to the Editor xi 325

E

Ebert, William R., Ph.D.,
(Robert W. Morris, M.S.),
(Robert L. Bogner, Ph.D.)
Use of Radioactive Tracer to Study a Sustained Release Dosage Form in Humans, Indications, Modalities and Limitations, vi 152

F

Flanders, James F., M.D.,
Spontaneous Hypoglycemia x 286
Flinn, Lewis B., M.D.,
What are the Criteria for the Diagnosis of Diabetes Mellitus, xi 321
Letter to the Editor xii 365
Flinn, Robert B., (Editorials)
Publish or Perish i 23
Regional Planning iii 77
Responsibility of the Profession iv 107
Third Factor v 113
The Case Against the Osmometer vi 141
The Role of the Modern Emergency Room vii 169
The Role of the State Medical Journal viii 197
An Answer to Obesity ix 231
The Value of a State Medical Journal xi 332
The Regional Medical Program xii 364
Frelick, Robert W., M.D.,
Methadone in the Relief of Pain x 297
Letter to the Editor xi 326

G

Gliwa, Edward F., M.D.,
(Harold J. Horoho)
Delaware's Infant Maintenance Program, ix 249
Grossman, Searles A., Ph.D.,
(Harry Kaufmann, Ph.D.)
Effects of Participation upon Self-Evaluation and Job Satisfaction, iv 102

H

Hall, William T., M.D.,
Coronary Embolism with Survival, Case Report, v 125
Heather, Arthur J., M.D.,
The Use of Hexanicotol* (Inositol Niacinate) in Peripheral Vascular Disease, ii 33
Hofford, James M., M.D.,
(Howard P. Angstadt, Ph.D.)
A Simplified Method of Analysis of Respiratory Gases x 272
Analysis of Respiratory Gases in Blood, x 276
Holloway, William J., M.D.,
(E. G. Scott, M.S.),
Ampicillin in the Treatment of Bacterial Infections of the Respiratory Tract i 1
(R. A. Kahlbaugh, M.D., E. G. Scott, M.S.)
Methacycline in the Treatment of Urinary Tract Infections, ix 245
(E. G. Scott, M.S.)
Nosocomial Infection x 263

I

Israel, S. Leon, M.D.,
Physician in Sex Education, The Role and Responsibility of the, ii 45

K

Kahlbaugh, Richard A., M.D.,
Cushing's Disease Treated by Bilateral Total Adrenalectomy, x 292
Katzman, Edwin C., M.D.,
(Arthur Burke, B.Sc.),
Acute Iron Intoxication xi 317

L

LaMotte, William O., Jr., M.D.,
The Medicare Program, Past — Present — Future, xi 313
Linton, Eugene B., M.D.,
The Physician and the Challenge of Sex Education, viii 205

M

Minor, Charles L., M.D.,
Inguinal Hernias and Hydroceles in Infants and Children iv 85
Morris, Allston J., M.D.,
Highlights of the First National Congress on the Socio-Economics of Health Care, iii 68
Pulmonary and Eosinophlic Reaction to Nitrofurantoin x 299
Myerson, Ralph M., M.D.,
Laboratory Findings in Hepatic Cirrhosis, ii 50

Mc

Edward S. McCabe, M.D.
Intermittent Porphyria, Landry's Ascending Paralysis in Acute, iv 94
McGee, Lemuel C., M.D.,
Graduate Medical Education ii 30
L.B.F., Editorial x 257
McGuire, H. Thomas, M.D., (President's Page)
Health Facilities Planning Council, Inc., i 21
Ferment in Medicine ii 53
Comments on H. R. 5710 iii 75
Thoughts on Occupational Health Orientation iv 105
Physician Involvement in Health Facility Planning v 131
Legislation for Loans to Voluntary General Hospitals vi 165
Notes on the Activities of the AMA, House of Delegates Meeting, June 18-22, 1967 vii 188
Some Comments on Rights and Privileges x 312
Thoughts on Health Careers xi 333
President's Address to the House of Delegates, 1967 xii 341
McQuade, Mary C., R.N.,
Public Health Nursing in Delaware ix 241

N

Nelson, Dewey A., M.D.,
(Richard G. Berry, M.D.),
Neurological Manifestations of Antipyrine Poisoning, iii 57

P

Paulshock, Bernadine Z., M.D.,
Prediction of Adult Stature ii 39
Glandular Gleanings viii 211
Hirsutism: Diagnosis and Management x 267
Pennington, Martin B., M.D.,
What the Social Security Disability Program Means to You and Your Patient vii 184
Pierson, Frank F., Jr.,
(Thomas D. Peace)
Tuberculosis Control in Delaware ix 236
Platt, David, M.D.,
A New Breed of General Practitioner, ii 31
Porter, Winder L., M.D.,
(John W. Gray)
Education has Vital Role in Correcting Misconceptions about Venereal Diseases, ix 232
Preston, Daniel J., M.D. (President's Page)
Thoughts on Health Careers xi 333
The State Legislature and Medicine vii 362
Pullen, Richard D., M.D.,
Haemophilus Influenza x 209

R

Rose, Barbara, M.D., Letter to the Editor xii 365
Rosenblum, Herman, M.D.
Letters to the Editor xi 327

S

Sensenig, David M., M.D.,
(Melvin H. Sher, M.D.),
Surgical Treatment of Esophageal Hiatus Hernia, i 6
Sanders, R. Douglas, M.D.,
Two Ventilating Attachments for Bronchoscopes vii 170
Stern, Oscar N., M.D.,
The Stepchild in the Physician's Armamentarium, i 29
Stroud, Henry H., M.D.,
Child Diagnostic and Development Center, (Letters to the Editor) iii 73

T

Tezcan, U. P., M.D.
(Robert W. Frelick, M.D.)
(Robert L. Meckelnburg, M.D.)
Low Dose Therapy of Hyperthyroidism vi 142

W

Weiss, Sheldon W., Ph.D.,
The Case of Mistaken Identity—A Cause for Marital Conflict, iv 99
Wendel, Henri F., M.D.
The Family Physician (Delaware Academy of General Practice) iii 78
Wilpizeski, Chester, Ph.D.,
(Yoshisato Tanaka, M.D.)
Recent Animal Contributions to the Study of Salicylate Ototoxicity, iv 90

V

Vandervort, William, M.D.,
Familial Mediterranean Fever, x 306

Y

Young, Nathaniel, M.D.
Tuberculin Skin Testing, With Specific Reference to the Tine Test, ix 235

Delaware
Medical Journal

JANUARY, 1967
NUMBER 1
VOLUME 39

AMPICILLIN IN THE TREATMENT OF BACTERIAL INFECTIONS OF THE RESPIRATORY TRACT

● Ampicillin is the first broad spectrum penicillin to be commercially available in this country. This antibiotic is particularly useful in the treatment of pneumonia and other bacterial respiratory infections. Ampicillin is effective against strains of Haemophilus Influenzae, a common pathogen in children, and may be the drug of choice in childhood pulmonary infections.

William J. Holloway, M.D.

E. G. Scott, M.S.

Ampicillin is the first broad spectrum penicillin to become available for clinical use in the United States, and it has had extensive trial both before and after its release in 1964.[1] As early as 1962 reports appeared in the American literature proclaiming the efficacy of this antibiotic in the treatment of gram positive and gram negative infection.[2] Ampicillin appeared to be as effective as penicillin G *in vitro* and *in vivo* against the gram positive organisms which usually cause infection of the respiratory tract and had the advantage of being effective against some of the gram negative organisms, notably *Haemophilus influenzae*. Our early clinical experience with ampicillin, reported in 1963,[3] included sixteen patients who had lobar pneumonia, all of whom experienced a good result from this therapy. This experience and the reports of others[4] on the efficacy of ampicillin in the treatment of *H. influenzae infections* prompted us to study a group of children and adults with bacterial respiratory tract infection treated with ampicillin.

Dr. William J. Holloway is an Associate in Medicine and Director of the Infectious Disease Research Laboratory, Wilmington Medical Center.

Mr. E. G. Scott is Director of Microbiology, Delaware Division, Wilmington Medical Center, and coauthor of Bailey and Scott, *Diagnostic Microbiology*.

Since *H. influenzae* is a frequent and important infecting organism in the pediatric age group, we were particularly interested in treating children with this new antibiotic. It is a common practice in this locale to use tetracycline in the treatment of bacterial respiratory infections in children. The advisability of this practice is under serious question because of the increasing incidence of tetracycline-resistant strains of Group A streptococcus and *Diplococcus pneumoniae.* We have seen clinical failures in patients given tetracycline antibiotics for the treatment of infections due to group A streptococci, and there are now reports in the literature of failures occurring when infections due to pneumococci have been treated with tetracycline.[5] For these reasons, further clinical experience with ampicillin in the treatment of these infections seemed warranted.

METHOD OF STUDY

All patients admitted to the adult and pediatric medical services of the Delaware Division of The Wilmington Medical Center who were suspected of suffering from bacterial respiratory infection were considered for inclusion in the study; those excluded from the study were done so for the following reasons:

1. Administration of antibiotic therapy prior to admission to the hospital
2. Concomitant antibiotic therapy given with the ampicillin
3. Previous history of penicillin allergy or other significant allergy
4. Failure to fit the criteria for the diagnosis of bacterial respiratory tract infection (positive culture or typical history, physical, and x-ray findings with elevated white blood count)

A total of 100 patients were studied, but 21 were excluded for one or more of the above stated reasons. Seventy-nine patients are reported herein: 60 suffering from lobar pneumonia (31 children, 29 adults); 10 children with bronchiolitis; 4 children with otitis media; 5 adults with group A streptococcal tonsillitis or pharyngitis. The ampicillin was administered by the oral or parenteral route, depending upon the clinical status of the patient. The children were given 50 to 100 mg./kg./day, while the usual adult dose was 1 to 2 grams/day. Appropriate pre- and post-treatment cultures were carried out on all of the patients; serum antibiotic and antibacterial levels also were determined on a representative number of patients. Toxicity studies included pre- and post-treatment hemograms, urinalyses, blood urea nitrogen, and serum transaminase determinations in the majority of the patients treated.

RESULTS

Pneumonia in Children

There were 31 children with clinical and x-ray evidence of pneumonia; 25 of these had a pathogen isolated from one or more sources: *D. pneumoniae* in 16;; *H. influenzae* in 5; *Staphylococcus aureus* in 2; group A streptococcus in 2. In the remaining six patients a pathogen was not isolated, but the clinical profile was indicative of bacterial pneumonia. Seven of the children were given ampicillin by oral suspension only; the remaining 24 children were treated with intramuscular ampicillin followed by the oral preparation when warranted by their clinical condition. The period of treatment varied from 4 to 21 days with the usual course of therapy being 8 days.

Twenty-eight of the 31 children experienced a good result from ampicillin therapy, while one patient was considered an indeterminate result. There were two treatment failures; in one case a penicillin-resistant *S. aureus* was isolated from blood culture, and the patient subsequently responded to cephalothin therapy. The other treatment failure occurred in a three-year old boy with lobar pneumonia. Ampicillin, in a dosage of 100 mg./kg. for four days, failed to affect a clinical response; the patient was given cephalothin therapy with an excellent clinical response.

Pneumonia in Adults

Twenty-two of the 29 adults with lobar pneumonia had a pathogen isolated from one or more source (*D. pneumoniae* in 18, *H. influenzae* in 2, *Klebsiella-Aerobacter* in 2); in seven patients the diagnosis was made on

TABLE 1

Clinical Results Ampicillin

Type of Infection	*No. Patients*	*Results*		
		Good	*Poor*	*Indeterminate*
Pneumonia—Adults	29	26	1	2
Pneumonia—Children	31	28	2	1
Bronchiolitis	10	10		
Streptococcal pharyngitis	5	5		
Otitis media	4	4		

TABLE 2

Bacterial Susceptibility
Test Tube Dilution Technique

Organism	No. of Strains	Minimal Inhibitory Concentration			
		<0.19	0.38-6.1	6.2-100	>100
Diplococcus Pneumoniae	25	25	—	—	—
Group A beta-hemolytic streptococcus	15	15	—	—	—
Haemophilus Influenzae	27	6	21	—	—
Staphylococcus aureus Penicillin-sensitive	10	2	—	—	—
Staphylococcus aureus Penicillin-resistant	6	—	—	1	5

TABLE 3

Serum Ampicillin Levels

Patient	Route	Dose	Serum Level	
			I Hour	5 Hours
No. 1	I.M.	0.5	3.2	2.6
No. 2	I.M.	0.25	2.3	0.9
No. 3	I.M.	0.5	3.9	2.2
No. 4*	I.M.	0.125	2.8	1.8
No. 5*	I.M.	0.25	3.7	0.8
No. 6	P.O.	0.5	7.3	2.5
No. 7	P.O.	0.5	3.4	2.0
No. 8	P.O.	0.5	1.2	0.8
No. 9*	P.O.	0.25	4.6	3.9
No. 10*	P.O.	0.25	1.1	0.6
No. 11*	P.O.	0.125	2.4	0.9

*Infant

clinical grounds alone without a significant pathogen being isolated.

Fourteen of the 29 adult patients were given ampicillin by the oral route only; the remainder received ampicillin by the intravenous or intramuscular route prior to receiving oral ampicillin. The duration of treatment ranged from 4 to 14 days, and the average dose was 1 to 2 grams daily. The patients with pneumonia were typical of those seen on a medical ward service in that 23 of the 29 had significant complications, including alcoholism in 5, congestive heart failure in 4, lung abscess in 3, bronchogenic carcinoma in 3, cirrhosis of the liver in 3, diabetes mellitus in 2, bronchiectasis in 1, cerebral thrombosis in 1, and pregnancy in 1. In spite of these poor-risk patients, the results were considered to be good in 26 of the 29 patients studied. The results were considered indeterminate in 2 patients, both of whom were suffering from underlying pulmonary malignancy, and the results were considered poor in one patient who subsequently was shown to be suffering from pulmonary tuberculosis.

Bronchiolitis

Twenty-two children were admitted to the ampicillin study with the tentative diagnosis of bronchiolitis. Only 10 of these were accepted eventually as having bacterial bronchiolitis; in 6 of these the diagnosis of bacterial infection was made on the basis of positive cultures from the nasopharynx and throat (*D. pneumoniae* in 4, *H. influenzae* in 1, *S. aureus* in 1). The remaining 4 children were accepted as bacterial bronchiolitis on the basis of leukocytosis, their clinical course, and negative viral studies. The dose of ampicillin in the patients with bronchiolits ranged from 0.5 to 1.5 grams per day, the average dose approxmating 100 mg./kg./day. Two of the children were treated with ampicillin suspension only, but the remaining 8 received ampicillin by the intravenous route until their clinical condition warranted oral administration. All 10 patients with bacterial bronchiolitis were afebrile within 48 hours of the institution of treatment. Ancillary measures, including croupette, bronchodilators, steroids, and antihistamines undoubtedly contributed to the successful outcome; however, since none of these measures were consistent in all of the patients studied, it is very difficult to assess the exact role of ampicillin in the improvement of these patients.

Streptococcal Pharyngitis

Five adult female patients, ranging in age from 13 to 45 years, were treated with ampicillin in a dosage of 250 mg. four times a day for ten days. All patients were demonstrated to have initial cultures positive for group A, B-hemolytic streptococcus by conventional and fluorescent antibody procedures. Throat cultures were repeated on the third, seventh, and tenth days of therapy on all of the patients (fluorescent antibody technique), and in no instance was there a positive culture subsequent to institution of therapy. All five patients were afebrile within 36 hours and practically asymptomatic on the third day of therapy.

Otitis Media

Four patients, aged 10 months to 2 years, who were suffering from bilateral otitis media were treated with ampicillin. A pathogen was isolated from the nasopharynx in all four instances (*H. influenzae* — 2; *D. pneumoniae* — 1; *H. influenzae* plus *D. pneumoniae* —1). All four patients had underlying complications which prompted their admission to the hospital: pulmonary tuberculosis in 1, eczema with pyoderma in 1, hypogammaglobulinemia in 1, asthma in 1. The infant suffering with pyoderma was receiving erythromycin when the otitis media due to haemophilus developed. All four of these infants demonstrated a good response to ampicillin given in a dosage of 100 mg./kg. of body weight for three to eight days.

Side Effects and Toxicity

Significant side effects occured in four of the 79 patients in this study; all four of these were in children suffering from pneumonia. One child developed a transient diarrhea which did not require cessation of therapy; oral moniliasis developed in another child, and a diaper rash in a third.

The most serious side effect was the development of Henoch-Schoenlein purpura and subsequent nephrosis in an 11-year old boy. This young patient with a history of allergic bronchitis had been given penicillin G by mouth as an out-patient because of the clinical diagnosis of pneumona. He failed to respond after four days of therapy and was admitted to the hospital where an x-ray revealed a lung abscess with considerable surrounding infiltrate. Sputum and nasopharyngeal cultures revealed *H. influenzae.* Ampicillin was administered in a dosage of 500 mg. intramuscularly every six hours for seven days, followed by oral ampicillin 250 mg. every six hours for 21 days (total dose 35 gm.). Henoch-Schoenlein purpura with skin lesions and gastrointestinal bleeding developed on about the twentieth day of therapy. The patient subsequently showed evidence of renal irritation and developed a classical nephrotic syndrome. Tetracycline therapy was instituted, and the lung abscess progressed to complete healing. It may be conjectured that this unfortunate side effect could have been a result of the bacterial infection rather than an adverse response to the ampicillin.

Laboratory Data

Pre- and post-treatment laboratory studies, including hemogram, urinalysis, blood urea nitrogen, and serum transaminase determinations, did not reveal any abnormalities attributable to ampicillin therapy.

Ampicillin susceptibility studies, utilizing the test tube dilution technique, were carried out on all isolates from patients in this study. Table 2 lists the results of these sensitivity determinations. All strains of *D. pneumoniae* were inhibited by 0.19 mcg./ml. or less of ampicillin, and the strains of haemophilus isolated were susceptible to 0.38 mcg./ml. of the drug. The penicillin-sensitive strains of *S. aureus* were inhibited by 0.78 mcg./ml. or less of ampicillin. The penicillin-resistant strains of *S. aureus* required more than 100 mcg./ml. of ampicillin for inhibition.

Antibiotic and antibacterial serum levels were carried out in selected patients in this study. Table 3 presents a representative number of these antibiotic levels in patients receiving ampicillin parenterally and orally. The serum antibacterial levels correlated well with the serum antibiotic levels, and there were no instances in which patients receiving ampicillin failed to show a satisfactory antibacterial effect in their serum. The serum of patients receiving ampicillin demonstrated a bactericidal as well as a bacteriostatic activity against their own infecting organism.

Discussion

All 79 of the patients included in this study required hospital admission, and all represented serious bacterial respiratory problems. The fact that 73 of the 79 patients in the study experienced a good clinical result speaks well for the efficacy of ampicillin in the treatment of this type of infection. The antibiotic was well tolerated by injection and by mouth with a very low incidence of toxicity. Admittedly, the one patient who developed a nephrotic syndrome following ampicillin therapy presents a rather alarming side effect, but one cannot be certain whether this was a result of the ampicillin therapy or of the bacterial infection.

Since *H. influenzae* is not a commonly isolated pathogen in adults suffering from bacterial respiratory infection, penicillin continues to be the drug of choice in the treatment of these patients. Since *H. inflenzae* is a common respiratory pathogen in the pediatric age group, ampicillin must be considered to be the drug of choice in the treatment of these patients. Penicillin allergy would appear to be the only clear-cut indication for the use of drugs other than ampicillin in the treatment of the infant or child suffering from bacterial respiratory infection.

REFERENCES

1. Quinn, E. L., Cox, F., Jones, D., and Zarius, L. Clinical experience with parenteral ampicillin. Antimicrobial Agents and Chemotherapy 1964, p. 226.
2. Ross, S., Lovrien, E. W., Zaremba, E. A., Bourgeois, L. and Puig, J. R. alpha-Aminobenzyl penicillin — New broad spectrum antibiotic. Jour. Am. Med. Assoc. 182:238, 1962.
3. Holloway, W. J., Peters, C. D., and Scott, E. G. Clinical experience with oral and parenteral ampicillin. Antimicrobial Agents and Chemotherapy 1963, p. 314.
4. Ivler, D., Thrupp, L. D., Leedom, J. M., Wehrle, P. F., and Poitnoy, B. Ampicillin in the treatment of acute bacterial meningitis. Antimicrobial Agents and Chemotherapy 1963, p. 335.
5. Turck, M., Smith, R. H., Wallace, J. F., and Petersdorf, R. G. Arch. Int. Med. 117:242, 1966.

This study was supported in part by a grant-in-aid from Bristol Laboratories.

SURGICAL TREATMENT OF ESOPHAGEAL HIATUS HERNIA

• **Improvements in the surgical management of esophageal hiatus hernia are urgently needed. The authors review results in the treatment of symptomatic hiatus hernia in 43 patients and suggest further study to draw final conclusions.**

David M. Sensenig, M.D.
Melvin H. Sher, M.D.

Esophageal hiatus hernias are fairly common lesions, many of which are asymptomatic. On the other hand, they may cause difficulties such as hematemesis, epigastric and anginoid pain, heartburn, belching, and various dyspeptic symptoms. When esophagitis results from reflux of gastric contents, continued inflammation may lead to the serious complication of stricture of the esophagus with dysphagia. If symptoms persist despite adequate medical therapy, including ulcer diet, antacids, elevation of the head of the bed, and avoidance of constricting abdominal garments, the patient may be referred for operation.

Various surgical procedures have been used, including phrenic nerve crush for the poor risk patient, transthoracic repair using Sweet's[1], Allison's[2], or Merendino's[3] operation or abdominal repair recently combined with procedures to reduce gastric acidity. The principles of repair center around ablation of the sac, attachment of the phreno-esophageal ligament to the undersurface of the diaphragm, and narrowing of the diaphragmatic pillars to close the opening around the esophageal hiatus. Reports of success of repair of the hernia have varied greatly. Some authors report a 2 to 4 per cent recurrence rate[4]. There have been reports of much higher recurrence rates, such as 45% reported by Miller, et al[5].

Periodic review of results is necessary to determine future therapy. Accordingly, we have reviewed the records of patients undergoing hiatus herniorrhaphy at the Philadelphia Veterans Administration Hospital from the opening of the hospital in 1952 until December 31, 1965. All living patients were recalled for esophagoscopy, radiographs of esophagus and stomach, and studies of gastric acidity. These examinations revealed 7 recurrent hernas of which we were unaware. All recurrences were demonstrated by x-ray, except in two cases where recurrence was obvious on esophagoscopy manifested by reflux, esophagitis, and displacement of the esophagogastric junction into the thorax.

Clinical Data

Forty-three patients have been treated for symptomatic hiatus hernia. There were 42 men and 1 woman. There were six patients from age 30 to 39, 15 from 40 to 49, 9 from 50 to 59, 11 from 60 to 69, and two aged 70 years and over.

Dr. Sensenig is Assistant Professor of Surgery, University of Pennsylvania; Dr. Sher is Instructor in Surgery, Hahnemann Medical College.

From the Department of Surgery, Veterans Administration Hospital, Philadelphia, Pennsylvania.

Epigastric distress and heartburn occurred in 30 patients, hematemesis in 11, nausea and vomiting in 8, melena in 5, weight loss in 5, anginoid pain in 3, belching in 3, precordial pain in 2, weakness and anemia, and intractable singultus in 1 each.

Esophagoscopy was not performed in 19 patients, and was unsuccessful in one patient. Endoscopic perforation of the cervical esophagus occurred in two patients. In 15 patients esophagitis was found. Six patients were found to have esophageal stenosis; in one of them severe narrowing and fixation was visualized at 35 cm., simulating carinoma. Other esophageal lesions, web and fibroadenomatous polyp, were found at surgery. Both these lesions were resected at the time of hernia repair, which was performed by the abdominal route. Six patients were found on admission to have a hemoglobin level of less than 10 grams per cent.

Twelve patients had recognized peptic ulcer disease, although not all of these had a simultaneous ulcer problem. One patient had had a previous closure of a perforated ulcer, while two had undergone prior partial gastrectomies. No acid studies of any kind were performed on 16 patients. In the later years of this series 12 hour overnight gastric acid secretion was more frequently studied, being measured in 24 patients. Ten patients had an overnight gastric secretion of 18 meq. or more while 1 patient secreted 121 meq. of free acid overnight. This patient had experienced repeated episodes of bleeding and was thought by roentgen examination and at operation to have had a recently healed post-bulbar ulcer. One patient had a large lesser curvature ulcer in the herniated portion of the stomach. Five patients had concomitant disease of the gallbladder manifested by visualized stones or non-function. Cholecystectomy was performed at the time of abdominal repair in these patients. One patient had undergone prior cholecystectomy.

Results

Mortality and Complications: Forty-eight hiatus herniorrhaphies and 1 phrenic nerve crush were done with no operative mortality. One patient died of a pulmonary embolus 5 months following vagotomy, hiatus hernia repair, pyloroplasty and incidental splenectomy for his hiatus hernia and associated active duodenal ulcer. He developed a subphrenic abscess which required drainage. Because of esophageal stricture, repeated dilatations were required. He remained in a poor nutritional state until his death. Other complications included another incidental splenectomy, pyloric obstruction despite pyloroplasty requiring a secondary gastroenterostomy in 2 cases, 4 wound infections and 2 dehiscences of abdominal incisions, which subsequently required repair of the resultant hernias.

Abdominal Approach: Abdominal repair of the hernia was performed by closing the crura posterior to the esophagus without vagotomy 7 times. There were 5 known recurrences, and three patients were symptomatic. One patient had a later transthoracic repair with success at the U. S. Naval Hospital in Philadelphia. Another had a repeat abdominal repair with vagotomy, pyloroplasty, and repair of incisional hernia. The third had a transthoracic Merendino repair, vagotomy, and abdominal pyloroplasty, the so-called composite operation. These last 2 operations were performed at the Philadelphia Veterans Administration Hospital in the autumn of 1965. Although the follow-up is short, they are doing very well.

Abdominal repair, vagotomy, and a gastric drainage procedure, unless there was a previous gastrectomy, was performed as the initial operation 12 times with 3 known recurrences. Two of these patients were symptomatic with evidence of esophagitis, and in one the vagotomy was incomplete. These two patients underwent subsequent thoracic repair with recurrence in one. The third patient with recurrent hernia was asymptomatic; however, this might be related to a previous partial gastrectomy.

One patient operated upon for anginal syndrome thought to be caused by hiatal hernia was not relieved by abdominal repair. Two patients underwent successful abdominal repair, vagotomy, and pyloroplasty as a secondary operation, one for recurrence after abdominal repair alons, and one following thoracic repair.

Thoracic Approach: A transthoracic repair according to the method of Sweet was performed twice, with one symptomatic recurrence. This patient's symptoms were controlled by dietary management.

Allison's transthoracic repair was utilized 18 times, 4 of which were combined with vagotomy and gastric drainage via a small abdominal incision, the composite operation. There were 6 recurrences. Two of the patients were asymptomatic, one from the composite group and one from the group having the pure Allison repair. The 4 symptomatic patients were all treated by the pure Allison repair. One developed marked postoperative reflux with some dysphagia, but his symptoms are controlled at present on a medical regimen. A second patient developed epigastric distress and reflux postoperatively. He suffers from causalgia and is diagnosed as an inadequate personality by the psychiatrist. A third patient, when seen 5 years after repair,, was suffering from dysphagia, heartburn, and a weight loss of 40 pounds. Studies done on this patient revealed no free acid in response to histamine or dyanex blue. He recently died. The fourth symptomatic patient had a mild stricture. He was treated 5 months ago by abdominal repair with closure of the diaphragm anterior to the esophagus, vagotomy, pyloroplasty, Nissen fundoplication, cholecystectomy and appendectomy, with an excellent result. Even more recently he has undergone a successful resection of the sigmoid colon for diverticulitis with fistula to the bladder. The patient with intractable singultus was not relieved by a successful Allison repair.

In two of these Allison operations a gastrostomy was carried out, permitting retrograde dilations of an esophageal stricture using a swallowed string. In the course of one transthoracic Allison repair the esophagus was opened and a benign polyp resected.

The transthoracic Merendino repair was used once alone, twice following a recurrence after abdominal repair which included vagotomy and pyloroplasty, and three times as part of a composite operation which included a vagotomy and Heineke-Mikulicz pyloroplasty through a small abdominal incision. Recurrence of the hernia was not demonstrated after the composite operations. Recurrence took place after two of the other 3 operations. One of these two patients underwent a repeat modified Merendino repair with another vagotomy. Thus there were seven total operations in this group, four of which included vagotomy. Three presented complex problems and are described below.

A 63 year old man with hiatal hernia had a severe stricture, with thickening and fixation of the esophageal wall simulating carcinoma involving the distal one-third of the esophagus. Following dilatation over a string, a Merendino repair was carried out in 1959. As a result of the severe shortening of the esophagus, it would not have been possible to reduce the stomach into the abdomen otherwise. In 1961 a recurrence with regurgitation, stricture, and a large 2x3 cm. esophageal ulcer extending to the cardia led to a resection of the esophagus with a supra-aortic anastomosis and pyloroplasty. In June of 1963 he was doing fairly well, but had some difficulty with solid foods due to a narrowing of the anastomosis. He died in another hospital three years after resection as a result of cirrhosis of the liver with ascites and pneumonia.

After abdominal repair with vagotomy and pyloroplasty in a 61 year old man, esophagitis of a severe degree returned despite a negative Hollander test. A transthoracic Merendino repair dramatically relieved his symptoms. Two years after the thoracic repair another recurrence was demonstrated by x-ray. Six years after the transthoracic repair the patient suffered from esophagitis and left upper quadrant pain. Another Hollander test demonstrated 84 degrees of free acid. At a second thoracic operation a small recurrence anterior to the esophagus was demonstrated. The repair posterior to the esophagus was strong. Another vagus nerve resection, tightening of the hiatus, and infolding of a portion of the stomach just below the esophago-gastric junction was performed in June, 1965. No more could be done because of scarring in the area and fixation of the stomach to the undersurface of the diaphragm. At present he is entirely asymptomatic. A Hollander test reveals 24 degrees of free acid.

Man, age 44, with recurrence following abdominal hiatal herniorrhaphy, vagotomy, and pyloroplasty likewise had persistent esophagitis. Hollander test was negative for free acid. There was no free acid on histamine stimulation and no free acid on overnight secretion. A transthoracic Merendino repair was carried out with temporary improvement in symptomatology. Sixteen months later the patient had recurrent symptoms with gastric retention. A posterior gastroenterostomy cured gastric retention, but he continues to claim inability to work because of dizziness, headache, lassitude, malaise, and weakness. Extensive studies, including 5 hydroxy indole acetic acid excretion, were normal. He is considered to have a neuropsychiatric disability contributing to his problem.

In order to avoid any confusion which may arise because of re-operated cases, only cases of primary repair can be considered. There were 24 repairs without vagotomy, with 12 anatomic and 9 symptomatic recurrences. The total recurrence rate was 50 per cent, and the symptomatic recurrence rate 38 per cent. In contrast, there were 20 repairs which included vagotomy and gastric drainage with 4 anatomic recurrences, two of which were symptomatic, for an anatomic recurrence rate of 20 per cent and a symptomatic recurrence rate of 10 per cent. These results are almost the same as those calculated from the entire group, including re-operations. In the total group without vagotomy and drainage, the anatomic recurrence rate was 50 per cent and the symptomatic rate 38 per cent. In the total group with vagotomy and drainage, the anatomic recurrence rate was 18 per cent and the symptomatic recurrence rate 9 per cent.

One patient, age 70, because of poor general condition, underwent a left phrenic nerve crush in the neck and under local anesthesia for a symptomatic hiatus hernia causing epigastric burning, nausea, and vomiting. Following the operation all symptoms were relieved. He was readmitted about 6 weeks later and treated for aspiration pneumonitis with success. No late follow-up is available, this operation being performed 6 years ago.

Discussion

Surgical treatment in this series was reserved for patients who were not relieved by a medical regimen of bland diet, antacids, and elevation of the head of the bed. In the later years of this series, more attention was paid to a quantitative evaluation of acid secretion. Nevertheless, in the overall picture our patients were inadequately studied in this regard. More extensive use of esophagoscopy would have clarified the state of the lower esophagus in these patients. Certainly the presence of esophagitis is the most compelling indication for operation. As pointed out by Brintnall, et al(6), the least favorable results occur in those patients with symptomatology sufficiently nondescript to be considered dyspeptic.

More and more authors are recommending abdominal repair of the esophageal hiatus hernia plus vagotomy and a gastric drainage procedure. The thought is that this operation will control acid esophagitis despite the high incidence of recurrence. Two patients in our series suffered from reflux esophagitis associated with recurrent hernia despite a vagotomy. Thus, of 22 patients undergoing repair which included vagotomy, only two were symptomatic. One initially had a negative Hollander test, but later on this test was strongly positive. The second was difficult to evaluate because of psychiatric overlay, but was shown to have had a complete vagus section. Of course, esophagitis can occur when the pH is on the alkaline side, and esophagitis and stricture following esophagogastric anastomosis is a common occurrence despite vagotomy and a drainage procedure. Adler(7) reports that on several occasions he has encountered severe esophagitis from reflux of alkaline intestinal contents after high subtotal gastric resections. Miller and associates(5) have emphasized that extremes of pH at either end of the scale are capable of causing esophagitis.

Ingram, et al(8) have demonstrated an intrinsic sphincter mechanism at the lower esophagus. As these authors point out, the initiating factor in a sliding hernia may be an alteration of the intrinsic sphincter mechanism, with a consequent esophageal reflux and spasm leading to contracture and shortening of the esophagus. With reduction of acidity, spasm of the longitudinal musculature leading to shortening might be eliminated. Thus, vagotomy might reduce the incidence of anatomic recurrence and should be considered whenever gastric acidity is present. In addition, vagotomy permits a little elongation of the esophagus, which might be beneficial. If Ingram's theory of pathogenesis of esophageal hiatus hernia is correct, an alternative or complementary approach to the problem could be the restoration of an intrinsic mechanism because extrinsic mechanical factors alone would not prevent recurrence.

Improvements in the surgical management of esophageal hiatus hernia are urgently needed. The fact that Miller, et al(5) reported a recurrence rate of 45 per cent from the University of Minnesota reveals that we are not alone in finding a high recurrence rate. Although our early results with the composite operation of transthoracic hernia repair and vagotomy, plus an abdominal gastric drainage procedure, are encouraging, not enough time has elapsed to completely evaluate this procedure. As Sweet(1) points out, however, postoperative recurrences usually occur early.

The results in this series suggest that the addition of vagotomy and a gastric drainage procedure to hiatus hernia repair results in fewer anatomic and fewer symptomatic recurrences. We believe that the matter should be settled by a large series of randomized cases.

Summary

Forty-three patients with symptomatic esophageal hiatus hernias uncontrolled by a medical regimen were treated by 48 hiatus herniorrhaphies and 1 left phrenic nerve crush in the neck.

Twenty-one abdominal repairs were performed with 8 recurrences, for a 38 per cent recurrence rate, and 27 thoracic repairs with 9 recurrences, for a recurrence rate of 33 per cent. Five of 21 patients, or 24 per cent, were symptomatic in the abdominal group, while 7 of 27, or 26 per cent, were symptomatic in the thoracic group.

Twenty-six hernia repairs without vagotomy were performed. There were 13 recurrences, or 50 per cent, and 10, or 38 per cent, of the patients were symptomatic.

A total of 22 patients were treated by a hernia repair which included vagotomy. There were 4 recurrences, 3 occurring in the group of 14 patients treated by abdominal operation. Thus, there was a recurrence rate of 18 per cent in the vagotomy group. Only two of the 22, or 9 per cent, were symptomatic. One of these patients was shown to have an incomplete vagotomy.

One patient in poor condition was treated by left phrenic nerve crush with relief of symptoms but later development of aspiration pneumonia.

In this series of patients the results after either thoracic or abdominal repair of esophageal hiatus hernia are comparable. The results also suggest that the addition of vagotomy and a gastric drainage procedure to hiatus herniorrhaphy may result in fewer total and fewer symptomatic recurrences. It is suggested that a large series of cases randomized between repair with or without vagotomy and gastric drainage be studied in order to draw final conclusions.

REFERENCES

1. Sweet, R. H. Experiences with 500 cases of Hiatus Hernia: A Statistical Survey. J. Thoracic and Cardiovasc. Surg., 44:145-152, 1962.
2. Allison, P. R. Reflux Esophagitis, Sliding Hiatal Hernia, and the Anatomy of Repair. Surg., Gynec. & Obst., 92:419-431, 1951.
3. Merendino, K. A., Varco, R. L., and Wangensteen, O. H. Displacement of Esophagus into a New Diaphragmatic Orifice in the Repair of Para-Esophageal and Esophageal Hiatus Hernia. Ann. Surg., 129:185-197, 1949.
4. Crawford, E. S., and DeBakey, M. E. Abdominal Repair of Hiatal Hernia: Study of 138 cases. Amer. Surg., 24:889-895, 1958.
5. Miller, F. A., Neto, H., and Sellers, R. Esophagitis Associated with Esophageal Hiatal Hernias. An Experimental Evaluation of the effect of Acid-Peptic Inhibition. J.A.M.A., 183:1008-1010, 1963.
6. Brintnall, E. S., Blome, R. A., and Tidrick, R. T. Late Results of Hiatus Hernia Repair. Amer. J. Surg., 101:159-163, 1961.
7. Adler, R. H.: Hiatal Hernia and Esophagitis. Int. Abstr. Surg. 116:1-15, 1963.
8. Ingram, P. R., Respess, J. C., and Muller, W. H., Jr. Role of Intrinsic Sphincter Mechanism in Prevention of Reflux Esophagitis. Surg., Gynec. & Obst., 109:659-667, 1959.

INTERPROFESSIONAL CODE OF CONDUCT AND PRACTICE

REPORT FOR ACTION SUBMITTED TO THE BAR ASSOCIATION AND THE MEDICAL SOCIETY OF DELAWARE BY THE JOINT COMMITTEE FOR MEDICAL LEGAL AFFAIRS

The first Interprofessional Code of Conduct and Practice was adopted by the Medical Society of Delaware and the Delaware Bar Association in 1957. Since that time it has been the primary instrument in the successful resolution of historic annoyances between medicine and law in our state. Although basically sound in structure and content, an increased climate of cooperation between doctors and lawyers now allows for revision and expansion of the original document.

An extensive study has been completed by a subcommittee of the Joint Committee for Medical-Legal Affairs, and they submit the following for consideration and action by the doctors and lawyers of the State of Delaware.

Doctors of medicine and attorneys at law, as members of two professions possessing close personal relationship with the members of the public they serve, have established canons and principles of ethics consonant with the traditions and requirements of their respective callings. Nothing herein contained is intended to modify established codes of ethics governing the two professions.

Each profession has the duty to develop an enlightened and tolerant understanding of the other. The aims of the two professions are parallel in their service to society; this necessitates an understanding at all times and cooperation is owed by each profession to the other in the best interests of the public as well as in the best interests of the separate reputations of the two professions.

Each profession is obligated to respect the calling of the other. Neither the fact nor the appearance of incompetence, dishonesty or unethical conduct on the part of members of either profession may be tolerated. It follows, then, that each profession must vigorously support, within its own ranks, as well as in the ranks of the other, those ethical concepts which each has found necessary in the public good.

The law calls with increasing frequency upon the medical profession for its scientific knowledge and for its evaluation of facts so that the rights of individuals and of society may be determined before appropriate tribunals. This Interprofessional Code of Conduct and Practice constitutes recognition that, with the growing interrelationship of medicine and law, it is inevitable that physician and attorney shall be drawn into steadily increasing association.

This statement of principle is intended to be a guide for interprofessional conduct and practices. It will serve its purpose if it promotes the public welfare by improving the practical working relationships of the two professions.

THE PHYSICIAN'S FUNCTION

The medical profession affirms the obligation of the physician to cooperate willingly with the attorney in supplying facts primarily available only to him. The physician should accept the responsibility of explaining these facts in such a manner that the attorney understands them and can determine their relationship to the case.

It is for the physician to determine the actuality or probability of fact pertaining to his patient's condition. It is for the attorney to determine how and under what circumstances such facts are to be presented.

A physician should never advise on the amount of damages a patient should seek to recover. The proper province of his professional advice is the extent, degree, or percentage of illness, injury, disability or similar judgments, based upon his professional knowledge of the case. He should not advise upon technical rules of legal liability, of evidence or of trial techniques. The latter are within the exclusive province of the attorney.

It is important that the physician understand that legal proceedings in this country are conducted under the "adversary system." Under that system the attorney occupies a dual position. He is not only an officer of the court; he is also the advocate for his client. He does not and cannot properly represent both sides to a dispute. The physician should understand the function of examination and cross-examination in our adversary system. This system has developed in recognition of the truth that justice is best served if contestants may present their claims to some neutral person or panel of persons who can weigh the opposing claims.

II CONFERENCES

The physician and the attorney, when either considers it desirable and if it is feasible to do so, should confer on the common problems presented in a particular case. Such conferences should be arranged in advance of the hearing, at the mutual convenience of each, recognizing that to each profession time is of the utmost importance. No physician or attorney should be required to spend unnecessary time in arranging or attending such a conference.

In most situations, it is unfair to the client, the physician and the cause of justice to present a medical witness who has not first conferred with the attorney and who, therefore, may not be aware of the significance to the case of the evidence he is being asked to give. It is equally obvious that, in the ordinary situation, the attorney is less able to represent the full interest of his client where he has not had the advantage of advance conference with the physician. Adequate preparation for testifying is an essential and mutual obligation of the medical witness and the attorney calling him. The unprepared medical witness may do great disservice to the administration of justice.

III WRITTEN REPORTS

Physicians should appreciate the importance of promptness in providing attorneys with information. Attorneys should appreciate that the doctor must be given adequate time to prepare a report. Matters may often be settled out of court to the mutual satisfaction of the parties involved. Undue delay in providing medical reports may prejudice opportunity for settlement or other disposition of the case and thus create further expense, worry and even the loss of important testimony.

In the absence of court order, when a report is requested by someone other than the patient or the patient's attorney, the doctor may insist upon written authorization from the patient before giving the report.

IV COURT ARRANGEMENTS

It is the physician's obligation to be in court on time. Timing is not only important for the orderly and advantageous presentation of the case but also for the convenience of the court, other witnesses, the jury, the attorneys and other litigants. Attorneys should appreciate, however, that the physician has continuing and often unpredictable responsibilities to his patients. It should therefore be anticipated that, at times, courtroom procedure must give way to humanitarian considerations and the physician be permitted to testify "out of turn."

It is recognized that the dispatch of the business of the courts cannot depend upon the convenience of litigants, lawyers or witnesses, including doctors who are to be called to testify.

Unless impossible or inimical to the client's interests, lawyers should make such advance arrangements for the attendance of doctors as witnesses as will have due regard for professional demands upon the doctor's time, Similarly, the lawyer should minimize, insofar as practicable, the time required for the physician to remain in court.

It is the attorney's responsibility to advise a doctor as promptly as possible of a settlement which either obviates the necessity of the doctor's appearance or requires a resetting of the time when the doctor's presence is required. It is the doctor's responsibility to do his best to revise his schedule to accommodate such necessary timing changes.

Where a continuance or a settlement occurs at such time that the doctor's time is lost, then the doctor may properly make a reasonable charge for the actual time lost and not otherwise professionally spent.

V THE PHYSICIAN ON THE WITNESS STAND

Simplicity and brevity are cardinal virtues of the medical witness.

It is possible for medical testimony to be worded so technically that its meaning is entirely lost upon a jury or is so completely misunderstood that the jury, because of failure to comprehend the true import of the testimony, makes an erroneous finding.

When this situation occurs, it may be the responsibility of either or both the physician and the attorney. To make his professional testimony clear, both for the record and for physicians and attorneys on the other side, a medical witness may first express his findings and opinion in medical terms. Whenever he does so, he should translate those terms as accurately as possible into language intelligible to the court, the attorneys and the jury.

The medical witness should not assume the role of advocate. He should remember that his testimony is not intended to impress or edify but to explain and to enlighten the court and jury as to the truth of the matter. If it does not help explain and does not clarify the issues of a particular case, it has failed.

It is beneath the dignity of the attorney and equally in violation of the dignity of the physician for an examining attorney to subject the medical witness to abuse in order to test his competence or credibility.

VI RESPONSIBILITY FOR MEDICAL FEES AND EXPENSES RELATIVE TO LITIGATION

A. Pre-Litigation Medical Bills

It is recognized by both professions that a doctor is free to accept or decline treatment of any patient. If a doctor accepts the treatment of a patient, he can do so on any terms (including guarantees for payment) that he works out with the patient.

The fact that the patient later becomes involved in litigation does not make the attorney handling the case financially responsible for pre-litigation medical bills. It is recognized, however, that an attorney has a professional responsibility to see that known pre-litigation medical bills are paid from funds received in settlement or by judgment.

B. Litigation Bills And Expenses: Scope Of Attorney's Guarantee

When an attorney requests the assistance of a doctor in the conduct of a law case, the doctor relies on the attorney to see that the doctor's bills and expenses in connection with the litigation phase are paid. Therefore, (in the absence of a written warning by the attorney at the outset, that the attorney will not be responsible for the doctor's litigation bills and expenses), it is understood that an attorney requesting the assistance of a doctor personally guarantees the doctor's bills and expenses in connection with the litigation if these fees and expenses are not paid or cannot be paid by the patient.

C. Responsibility For Determining The Charges For Litigation Fees And Expenses

In connection with litigation, the doctor is free to charge any amount which seems appropriate to him. It is the attorney's responsibility to request in advance a statement of the doctor's charges or the basis of such charges. In the absence of such a determination in advance, the attorney should not be heard to complain of a doctor's charges.

An exception to the foregoing is in the situation where the treating physician must be called upon and relied upon by an attorney to supply litigation information. In this unique situation, the pre-litigation relationship between the patient and the doctor makes it impossible for the attorney to rely on any other doctor. In this situation, the attorney remains responsible for the litigation fees and expenses, but the treatment expense remains the obligation of the patient. Since the attorney is not free to choose the doctor, the treating doctor's fees and expenses for litigation services shall be reasonable.

D. Bills

Doctors should keep the records necessary to differentiate between treatment and litigation fees and expenses and bills should reflect the two categories. All bills should be in the name of the patient, who remains primarily responsible. Copies of bills should be sent to the attorney so that the attorney is kept currently informed of status of treatment and litigation fees and expenses.

VII DISPUTES AS TO MEDICAL-LEGAL BILLS

It is important that the two professions do not allow friction to arise because of fees and expenses. The doctor and the attorney should use every effort to dispose of such disputes reasonably and promptly. Where there is a dispute for involving a fee or expense which the doctor and attorney cannot resolve, either may refer the matter to the Joint Committee. Said referral shall be by letter, with a copy to the other party, who shall make a written reply to the Joint Committee within ten days (with a copy to the other party). Thereafter, the Joint Committee shall take such further action as is necessary to dispose of the matter.

VIII THE SUBPOENA

The doctor may be subpoenaed solely as a precaution to assure a postponement by the court if the doctor fails to appear. The lawyer's duty to his client may require such precaution.

The physician must answer to a subpoena like any other citizen, of course, except where grave emergency prevents his doing so. An emergency can never be a matter of mere convenience to the physician. It must always involve the genuine professional needs of a patient and the physician takes the risk of convincing the court that the emergency was of sufficient gravity to justify his ignoring the order of the court.

Attorneys should issue subpoenas promptly so that there may be the maximum possible time for the doctor's preparation to respond.

CLINICAL NOTICES AND MEETINGS

American College of Physicians	*Arthritis and Related Disorders* — Feb. 27 - Mar. 3, 1967, at the New York University Medical Center, 550 First Ave., New York City. Fee: ACP members $60; non-members $100. For registration forms and information write: Edward C. Rosenow, M.D., Executive Director, ACP, 4200 Pine St., Phila., Pa.
New York University Medical Center	*Immunologic Approaches to Mechanisms of Cutaneous Disease* will be the subject of a Symposium to be held at The New York Medical Center, March 29-31, 1967. For registration information write: Office of the Recorder, New York University Postgraduate Medical School, New York City, N.Y. 10016.

ACUTE SILENT PANCREATITIS AND RENAL VEIN THROMBOSIS PRESENTING AS DIABETIC COMA

• Silent acute hemorrhagic pancreatitis may present as diabetic coma. Both cases reported terminated in renal failure. Pathogenisis and diagnosis in a typical diabetic coma is discussed.

Mark G. Cohen, M.D.

Diabetic coma represents a challenge to every day medicine usually responding to appropriate therapy. When intensive therapy fails to achieve the expected results immediate investigations must be made to rule out other diseases obscuring the clinical picture. Severe overwhelming infections, extensive trauma, surgical complications, acute vascular occlusions and thyrotoxicosis are well known mitigating factors when present. Another well documented but less well known association is silent acute hemorrhagic pancreatitis. These patients demonstrate severe peripheral circulatory collapse in the absence of abdominal localizing signs and are often mis-diagnosed as acute mycardial infarctions or cerebral vascular occlusion. This paper describes two cases of silent acute hemorrhagic pancreatitis and acute renal failure presenting as diabetic coma.

Case 1

A 32 year old negro man was admitted comatose to the Wilmington General Hospital in February of 1964. The history, obtained from his mother, revealed that he was in apparent good health until several days prior to admission when he noted increasing thirst and frequent urination. Anorexia was rapidly followed by nausea and vomiting. There had been no associated fever, diarrhea, or abdominal pain. Twenty-four hours prior to admission he complained of severe headache, his breathing was noted to be heavy and there was increasing lethargy and stupor. One hour prior to admission he became unresponsive. The past medical history was negative for diabetes. He had received no medical examination since the age of three, but was known to be mentally retarded. There was no alcoholic history.

Physical examination revealed an obese negro man with rounded feminine appearing facies and hair distribution. The respirations were Kussmal in type with obvious acetone breath. The initial blood pressure was 60/0, pulse 120/min. The ears showed bilobed pinna. The nose and throat showed no inflammation or exudate. There was moderate bilateral gynecomatosis and female fat distribution. The neck was supple with no thyroid enlargement. The lungs were clear to auscultation. There was no cardiac enlargement or murmurs de-

---

Dr. Cohen is Senior Attending in Medicine, Wilmington Medical Center; Clinical Associate Professor, Temple University, Philadelphia, Pa.

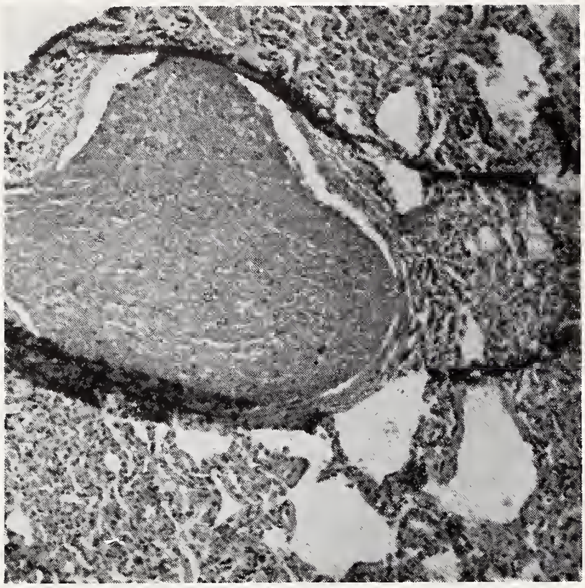


Figure 1. Thrombosis in a pulmonary vein. (Case 1 H&E x 100).

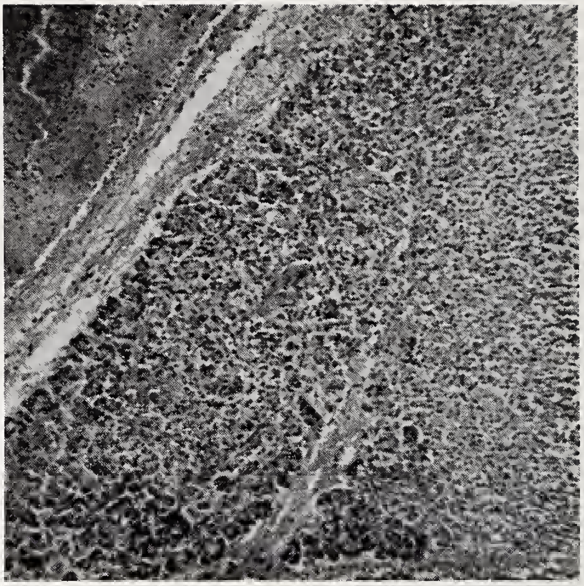


Figure 2. Acute pancreatitis with thrombosis in a pancreatic vein. (Case 1 H&E x 100).

tected but the heart sounds were muffled. The abdomen was soft, peristalsis hypoactive, distension light. The left testis in the scrotum felt atrophic. The right testicle could not be felt. The extremities were flaccid without edema. There were no localizing neurological signs. The rectal revealed brown stool, guiac negative.

The initial laboratory data revealed blood sugar 650 mg %, potassium 4.7 me, chlorides 107 me, CO^2 content 3.3 mm, venous Ph 6.81, plasma acetone trace, W.B.C. 13,850, segs 83, lymphs 17, hemoglobin 15 gm, hematocrit 54%. The electrocardiogram showed non-specific ST-T abnormality probably related to electrolyte imbalance.

On admission intensive therapy included intravenous insulin, Dextran and saline, as well as Aramine. Within the first hour the blood pressure rose to 120/60. By 12 hours following admission he had received 760 units of insulin and five liters of fluids and electrolytes. The blood sugar at this time was 346 mg %, venous Ph 7.03, CO^2 content 12 mm, PCO2 40 mm. His respirations were less labored, the abdomen remained soft, and he responded to painful stimuli. His 12 hour urinary output was 1350 cc. At 20 hours following admission the blood sugar was 250 mg % and regular insulin in doses of 15 units every 4 hours was sufficient for control. Despite chemical improvement there was no further clinical improvement. Over the next 12 hours the urinary output dropped to 180 cc. The patient became hypotensive requiring Levophed to maintain systolic pressure of 80 mm. Hg. Intravenous mannitol failed to produce any diuresis. The BUN was 34 mg %, CO^2 content 18 mm. 1. Thirty-six hours after admission moderate distension and midabdominal rigidity developed. A stat serum amylase was 481 somogyi units. Repeat blood sugars at hourly intervals increased from 280 mg % to 855 mg % despite 600 units of insulin over a five hour period. Hourly measurements of the urinary output ranged from 2 to 10 cc. A repeat BUN was 50 mg %. Levin tube suction drained small amounts of greenish fluid. Coma deepened, hypotension failed to respond to all measures including steroids and the patient died on the third hospital day.

Case No. 1 (Autopsy)

The significant pathologic findings showed bilateral gynecomastia, the right testis was not in the scrotum. The testes were atrophic. There was 2,000 cc. of brownish fluid in the peritoneal cavity and 700 cc. of clear stracolored fluid in each pleural cavity. The lungs

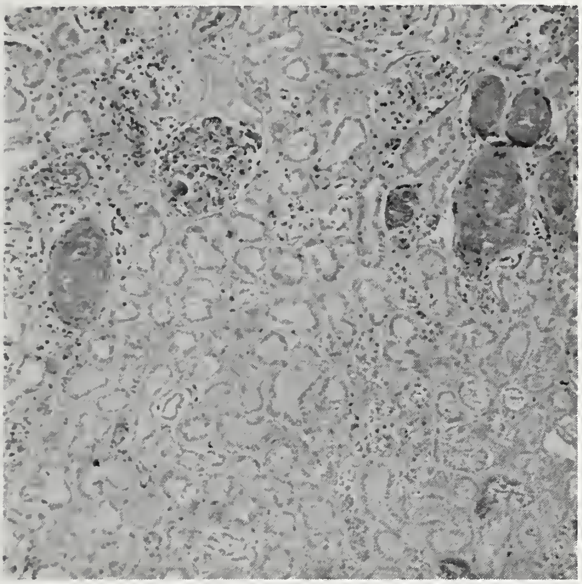


Figure 3. Thrombosis in the kidney renal veins with infarcation. (Case 1 H&E x 100).

showed moderate atelectasis, focal in distribution in the lower lobe of the left and right lungs. There was marked fat necrosis of the omentum and of all the soft tissures surrounding the pancreas. There were large areas of brown-black necrosis of the tail of the pancreas, measuring up to 2 cm. in diameter. Several smaller areas of necrosis were found, scattered throughout the pancreas. The kidneys weighed 180 grams and showed punctate areas of necrosis scattered through the entire surface of the kidneys. There were small thrombo-emboli within the veins at the hilum of the kidneys.

Miscroscopic Examination

Occasional thrombi within the smaller veins of the lower lobes of both lungs with focal areas of atelectasis. (Fig. 1) There was marked acute hemorrhagic necrosis scattered throughout the pancreas and thrombi were seen within the veins of the pancreas. (Fig. 2) The kidneys showed thrombi within the hilum and multiple smaller vessels showed thrombi within their lumens. (Fig. 3) There were fairly large areas of necrosis involving mainly the cortex. The testes showed hyalinization of the tubules with fibrosis of the testes and moderate proliferation of the interstitial cells.

Case 2

This 44 year old colored woman was admitted to the Wilmington General Hospital in shock and coma. Previous medical history showed no history of diabetes, hypertension, tuberculosis, or rheumatic fever. She had never been in the hospital except for five pregnancies. Two weeks prior to admission she developed anorexia, weakness, nausea, and chills without fever. The night before admission, she was extremely weak and subsequently on the morning of admission, she was found to be unconscious, cold, and clammy.

The pertinent findings on admission revealed temperature subnormal, 97 F., blood pressure 90/60 with Levophed infusion running. Pulse 100 per minute, respiration 28 per minute, Kussmaul-type respiration. The patient was comatose, obese, very dehydrated, but responding to painful stimuli. There was no pallor, cyanosis or jaundice. Fundi revealed some evidence of small hemorrhages and exudates. The neck was supple. There was no nuchal rigidity. There was no lymphadenopathy. The chest was clear to percussion and auscultation except for occasional rhonchi in the right base. The heart was not enlarged to percussion. The abdomen was obese and soft. There were no masses palpable. There was no hepatosplenomegaly present. The rectal examination was negative. There was no peripheral edema. Neurological examination revealed no focal neurological signs. The deep tendon reflexes were hypoactive bilaterally.

Laboratory Findings

The laboratory findings on admission revealed hemoglobin 14.7 gm, hematocrit 51%, W.B.C. 31,650 with 78% segmented, 3% stabs, 15% lymphs, and 4% monos. The urinalysis pH of 5, specific gravity 1.026, albumin 2^+, sugar 4^+, acetone 4^+, W.B.C. 6 to 8, R.B.C. 0 to 2, blood sugar 1600 mg %, plasma acetone 4^+, sodium 144 meq., potassium 4 meq., chlorides 95 meq., and CO^2 12.5 mM/1, blood pH 7, PCO2 45., BUN 67 mg %, serum creatnine 3.6 mg %, uric acid 9 mg %, calcium 7.7, serum amylase 1,825 units, serum lipase 9.7 units, total protein 5.8 gm %, albumin 1.8 gm %, globulin 4 gm %. Serology was nonreactive. The urine culture revealed proteus and E Coli, sensitive to Chloromycetin. A blood culture was negative, and the peritoneal fluid culture was also negative.

The portable chest x-ray was not satisfactory, but showed no gross abnormality of the heart or lung fields. The flat plate of the abdomen reveals a considerable degree of gastric dilation. Otherwise, no abnormalities were present. The EKG at the time of admission revealed a sinus tachycardia at the rate of 106 and ST elevation in 2, 3, and AVF, suggestive of posterior wall infarction. The repeat EKG taken the following day revealed again sinus tachycardia of 114 with abnormally flat or inverted T waves which was consistent with electrolyte imbalance, probably hypopotassemia.

Clinical Course

This patient was treated with Aramine, Levophed, saline, solu-cortef, and insulin including supportive symptomatic treatment. She received a total dose of approximately 500 units of regular insulin in about a 12 hour period. She was started on a combination of antibiotics including Chloromycetin, penicillin, and Keflin, as well as 1,000 cc. of whole blood. A repeat blood sugar in a 12 hour period fell to 395 mg %, serum acetone trace, CO^2 32 ml, pH was 7.37, potassium 2.4 mq. Shock persisted despite improvement in acidosis. Early morning of the second day, she vomited a brownish-black material. The abdomen remained soft and bowel sounds were present. Electrolytes revealed potassium 3.6 meq., CO^2 16.3 mM/1, blood pH 7.38, urine acetone negative, blood sugar 135 mg %, creatinine 3.6 mg %, BUN 55 mg %. The urine output initially was satisfactory but she became oliguric despite hydration and mannitol. On the second day of admission at 4:00 P.M. a blood sugar was 84 mg %. She quietly expired 32 hours after admission.

Case No. 2 (Autopsy)

The pertinent findings were a bilateral hydrothorax of approximately 200 cc. There was atelectasis of the lower lobes of both lungs. The pancreas showed marked edema punctuate areas of necrosis measuring up to .5 cm. The kidneys each weighed 300 grams and showed multiple areas of edema and necrosis and early infarction.

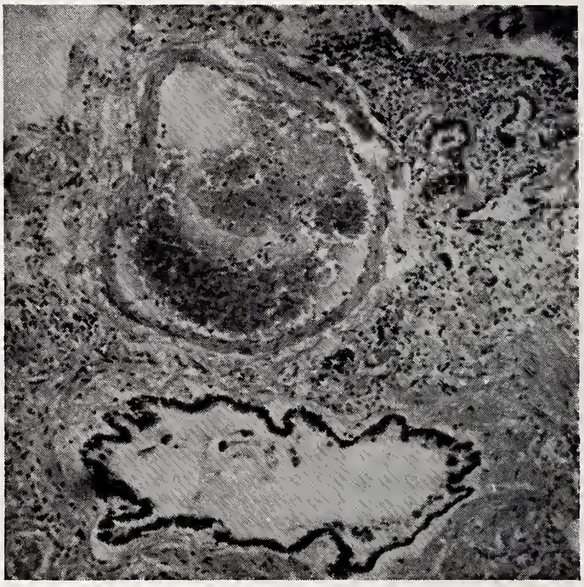


Figure 4. Thrombosis in pulmonary vessel. (Case 2 H&E x 100).

Microscopic Examination

There was congestion and edema of the lungs with multiple thrombi within the smaller veins. (Fig. 4) There was focal atelectasis of the lower lobes. The pancreas showed areas of acute inflammation and necrosis and multiple areas of fat necrosis. (Fig. 5) Thrombi were seen within the smaller veins of the pancreas. The kidneys showed multiple areas of acute inflammation and necrosis, however no definite gonadotrophin could be seen. (Fig. 6)

Discussion

In Case No. 1, the presence of eunuchordism, gynecomastia, small atrophic testis showing hylanization of the seminferous tubules and proliferative changes in the Leydig cells suggest the primary hypogonadism of Klinefelters syndrome. Unfortunately, buccal smears of gonadotrophin levels were not performed because of the urgency of the clinical problem. The fulminating course in both patients began with diabetic acidosis and coma. Shock and coma as a primary manifestation of painless acute pancreatitis have been emphasized in recent literature. (1) In their series Toller and Spiro reported two cases of

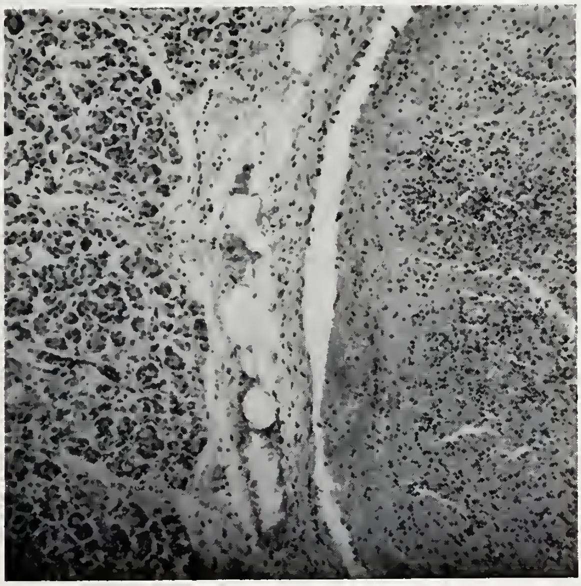


Figure 5. Acute pancreatitis with thrombosis in a pancreatic vein. (Case 2 H&E x 100).

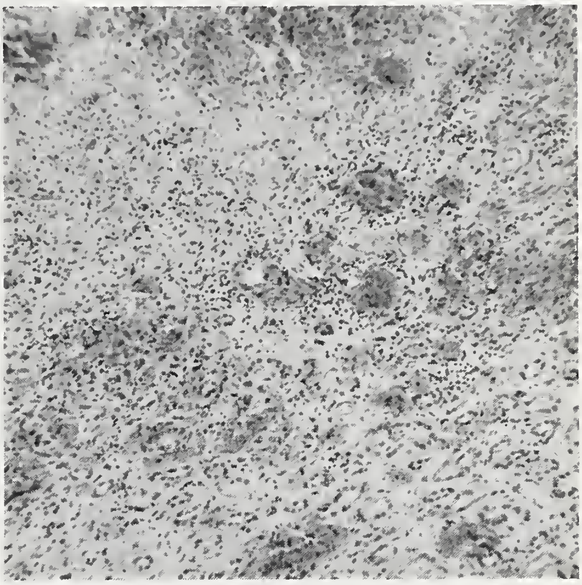


Figure 6. Kidney revealing early infarction. (Case 2 H&E x 100).

pancreatitis presenting as diabetic acidosis. Typical as of these cases there was no abdominal tenderness or rigidity on admission. Several authors (2) feel that the combination of diabetic acidosis and pancreatitis present a well defined entity. These characteristics are:

1. Early rapid fall in blood sugar.
2. Significant serum amylase elevations.
3. Extreme water electrolyte resistant dehydration requiring plasma or whole blood.
4. Early hypoglycemia reactions.
5. Severe prostration.
6. Failure to improve despite therapy.
7. Abdominal pain or tenderness of pancreatic distribution (delayed)
8. Profuse sweating.

In addition the first case showed a secondary hyperglycemic phase of relative insulin resistance despite improved acidosis which herald the oligura of intractible renal failure. Naturally, no criteria are absolute. Significant serum amylase elevations up to 3200 Somogyi units have been detected in diabetic coma without pancreatitis. (4) Elevations in these cases have been attributed to release of liver amylase as a result of disordered carbohydrate utilization. Despite these isolated reports the serum amylase remains the sole laboratory study for the diagnosis of acute silent hemorrhagic pancreatitis. It should be performed on all patients with atypical coma or shock, especially diabetic coma.

Renal failure complicating acute pancreatitis was extensively analyzed by Baslow and associates in a review of the literature with 13 cases of their own. Successful hemodialysis was carried out in one patient and the use of Heparin during therapy did not exaccerbate the pancreatitis. The pathology of renal failure was ascribed to tubulointerstitial nephropathy in most cases, several had bilatera cortical necrosis. One author described diffuse fat embolization. (6) The association of acute pancreatitis with renal vein thrombosis, renal infarction, and pulmonary emboli has not been recorded previously in the American literature. Although Baer and Neu have recently pointed out the association of acute pancreatitis and intravascular clotting associated with hyperparathyroidism, there was no evidence of hypercalcemia in either of these patients. (7)

The pathogenesis of acute renal failure following pancreatitis is somewhat obscure. Protracted circulatory failure, decreased blood vol-

Continuer on Page 22

Delaware Academy of General Practice

The Fifteenth Annual Meeting and Scientific Assembly of the Delaware Academy of General Practice were held at the Delaware Academy of Medicine on December 2 and 3, 1966. The annual business meeting was held on Friday, December 2 at 9 P.M. Most of the meeting consisted of the committee reports and the addresses of the officers. Noteworthy among the discussions was a discourse on the new Government Health care programs now in effect in Delaware and the new Title XIX about to go into full swing. It was felt by most of the members that Title XIX will far surpass Medicare in the scope of patients seen. Already the load of paper work is quite formidable.

Dr. Bishoff discussed current and pending legislation in Dover and its impact on our individual practices, and Dr. MacKelcan gave the report of the Education Committee. It was agreed unanimously that this year had been an outstanding one in education, and all the credit must go to our Education Committee.

The high point of the meeting was the election of officers for the year 1967.

President: *Rhoslyn J. Bishoff, M.D.*
President-Elect: *Maurice Goleburn, M.D.*
1st Vice President: *Jack Gelb, M.D.*
2nd Vice President: *Dene T. Walters, M.D.*
Secretary: *Chas. W. Wagner, M.D.*
Treasurer: *Wm. H. Duncan, M.D.*
AAGP Delegates:
Wm. D. Shellenberger, M.D.
Henri F. Wendel, M.D.
Alt. Delegates:
David Platt, M.D.
Douglas W. MacKelcan, M.D.
One Director: *Henri F. Wendel, M.D.*

On Saturday morning, December 3, the scientific assembly was held in the auditorium of the Academy of Medicine. There were four speakers, two in the morning session moderated by Dr. Robert W. Frelick and two in the afternoon session with Dr. O. N. Stern presiding.

The morning session dealt with the problems of sex and sex education in our community. Dr. S. Leon Israel from the University of Pennsylvania in Philadelphia pointed out that adequate physician education in this field is often lacking and the patient is left to his own devices in furthering his knowledge of this complex problem. Our moral code for many years has put sex in sort of a gray limbo state and we are only now awakening to the impact it is having on the youth of our nation. Dr. Eugene B. Linton from the Bowman Gray School of Medicine stressed the importance of more extensive sex education in our school systems. The physicians in turn must assist our educators in the establishment of such courses and adequate teacher education will take time.

There were many visitors from the legal and teaching professions in the audience and the discussion period was a lively one. Suffice it to say that enough enthusiasm was generated among the people present to get started on several joint ventures in this field.

The afternoon session was more strictly in the medical vein. Dr. Philip H. Henneman of the New Jersey College of Medicine discussed the pro aspects of Estrogen Replacement Therapy and his antagonist on the con side of the same question was Dr. Roy Hertz of George Washington University Medical School.

The festivities of the day were climaxed by a dinner and dance at the Gold Ballroom of the duDont Hotel. There, Dr. Henri F. Wendel handed over the gavel to the new President, Dr. Rhoslyn J. Bishoff. Among our guests were the President of the Delaware Dental Society and his wife, Dr. and Mrs. Wm. D. Wendle, and Mr. and Mrs. Lawrence C. Morris, Jr. of Chicago—our recent Executive.

President's Page

HEALTH FACILITIES PLANNING COUNCIL, INC.

The following is presented as a preamble to a very important community activity. It is my view that the medical profession should be appraised of this noteworthy project. The project outline is therefore offered for your information.

Introduction and Specific Aims . . .

During the past few years the cost of providing health services in the United States has risen at an alarming rate. Along with the most concerted efforts of individual institutions to keep costs within reasonable limits, there has been an increasing awareness of the need for coordinated planning of services and facilities.

The merger of the three major general hospitals in Wilmington represents a major step in the direction of coordinated planning. The Wilmington Medical Center operates approximately eighty percent of the general hospital facilities in New Castle County. Even if one assumes, however, that the Wilmington Medical Center will continue to provide such a large part of the hospital services in New Castle County and in Delaware, there remain other major health agencies which require coordination. This area is faced with a growing proliferation of nursing homes, mounting pressures for the erection of a hospital in Newark, and growing apprehension about the level of health services delivered by government, voluntary and proprietary hospitals throughout the entire state.

Other communities faced with the same problem have responded by creating area-wide health services planning councils. Major metropolitan centers have been particularly active in this respect. The activities of the resulting planning organizations and the success they have had in coordinating health programs, are evident in Philadelphia, Pittsburgh, St. Louis, Rochester, New York, etc.

The principles behind the operation of such health facilities planning councils is that they should have the responsibility of surveying the entire health field with expert professional assistance, of weighing each new project or expansion program, and of determining whether or not such project or expansions fill the overall community needs. They exercise their influence usually through the power of persuasion. Experience has demonstrated, however, that few institutions care to proceed with the project in the face of a planning council's decision that suggests the project is unsuitable.

Prompted by a recognition of the need for similar activity in Delaware, several concerned individuals undertook discussions of the possibility of creating such a council. This ultimately resulted in the creation of a nucleus of citizens around which could develop a program of the dimensions needed.

In late June of 1966 this group of sixteen people agreed to proceed with the incorporation of a planning organization and work was commenced toward the preparation of bylaws and articles of incorporation and the organization of a finance committee in an effort to secure private funds of sufficient size to get the planning council in operation.

The Health Facilities Planning Council was organized for the purpose of working toward accomplishment of the following aims:

A. To develop an orderly distribution of all health facilities in keeping with the projected population characteristics and overall community development.
B. To encourage individual health facilities to define and carry out their objectives and projected roles in relation to other facilities, services and community needs.
C. To stimulate the construction of needed health facilities, including those for education and training.
D. To discourage the construction of health facilities not conforming to community needs.
E. To assure more effective use of community funds by avoiding unnecessary duplication of highly specialized, infrequently used, expensive health facilities.
F. To improve patient care by developing more effective interrelationships among health facilities.
G. To stimulate health facilities to recognize opportunities for better coordination of services.
H. To correct deficiencies in existing health facilities and services.
I. To maintain and improve quality of patient care as economically as possible.
J. To demonstrate the need for philanthropic and public funds for health facilities purposes through a well-developed information program.

On behalf of the officers of your society, I extend prayerful hopes for a healthy and productive new year.

ACUTE SILENT PANCREATITIS AND RENAL VEIN THROMBOSIS PRESENTING AS DIABETIC COMA

Continued from Page 19

ume, and anoxia have been implicated. Beisel (8) has emphasized that progressive azotemia and oliguria following pancreatitis despite correction of hypotension and dehydration should be considered as evidence of renal failure until proven otherwise. An additional clue is the paradoxical development of insulin resistance as acidosis improved. The value of serum amylase determinations in the presence of renal insufficiency has also been challenged. Although elevated amylase levels have been documented in the absence of pancreatitis (9), more errors have been made in ascribing significant amylase elevations to azotemia in patients with unsuspected silent hemorrhagic pancreatitis. (10)

Summary

Two cases of silent hemorrhagic pancreatitis presenting as diabetic coma are described. The renal failure was associated with renal vein thrombosis. Persistant oliguria and hypotension despite correction of acidosis and hydration, rapid insulin resistance following initial control of hyperglycemia, and vague abdominal signs of pancreatitis distribution should alert the physician to the diagnosis of silent pancreatitis. Significant amylase elevations are usually reliable even when moderate azotemia and diabetic acidosis is present.

ACKNOWLEDGEMENT

The author expresses appreciation to S. S. Bjornson, M.D., for his assistance in the pathological data for this article.

REFERENCES

1. Toffler, A. H.; Spiro, H. M.: 'Shock or Coma as the Predominant Manifestation of Painless Acute Pancreatis." Annals of Internal Medicine 57:655-659, 1962.
2. Tully, G. T.; Lowentual, J. J.: "The Diabetic Coma of Acute Pancreatitis." Annals of Internal Medicine 48:310, 1958.
3. Root, H. F.: "Diabetic Coma and Acute Pancreatitis with Fatty Livers". J.A.M.A. 108:771, 1937.
4. Finn, R.; Cope, S.: "The Plasma Amylase in Diabetic Coma." Diabetes 12:141, 1963.
5. Balslov, J. T.; Jergensen, H. E.; Nielsen, R.: 'Acute Renal Failure Complicating Severe Acute Pancreatitis." Acta Chir Scand 124:348-354, 1962.
6. Lynch, M. J.: 'Nephrosis and Fat Embolization in Acute Hemorrhagic Pancreatitis." A.M.A., Archiles of Internal Medicine 94:709-717, 1954.
7. [illegible] Leslie; Neu, H. C.: "Intravascular Clotting and Acute Pancreatitis in Primary Hyperparathyroidism." Annals of Internal Medicine 64: 1062-1065, 1966.
8. Beisel, W. R.; Herndon, E. G.; Myers, J. E.; Stones, L.: "Acute Renal Failure as A Complication of Acute Pancreatitis." AMA, Archiles of Internal Medicine 104:539-546, 1959.
9. Malinowski, T. S.: "Clinical Value of Serum Amylase Determination." J.A.M.A. 149: 1380-1385, 1952.
10. Gross, J. B.; Parkin, T. W.; Maher, F. T.; Power, M. H.: "Serum Amylase and Lipase Values in Renal and Extrarenal Azotemia." Gastroenterology 39:76-82, 1960.

Editorials

PUBLISH OR PERISH

This month marks the beginning of a new influence in the Delaware Journal. With the establishment of an Editorial Board, it is hoped that a greater number of physicians will become interested in the future of the Journal. Hopefully, new sections of the Journal can be developed that will be of interest to the reader and more of the Society membership can be stimulated to write for it. Efforts are being directed towards the incorporation of more and more state and national medical news items. Progress is planned in the area of discussions and news concerning federal and state legislation for Medicare and Medicaid.

Perhaps more important however is that the Journal be developed into a more effective sounding board for ideas and problems of the individual member and the Medical Society as a whole.

During the next few years, much will happen as the impact of organized medicine begins to make changes in the very practice of medicine and the Delaware Journal would like to invite the members to use the pages of their Journal to air their views. We invite constructive criticism and ideas of how problems may be solved. Hopefully the Journal can become a means of communication for many ideas and in so doing, the best solutions of our problems may be arrived at.

If enough letters are received, the Journal would welcome the opportunity to publish all or parts of Letters to the Editor, particularly if they are of state wide interest.

It is a strange fact that as the number of doctors in the state has increased, the number of articles submitted to the Journal for publication has decreased. There are many reasons for this. One of which, of course, is the number of new national Journals that have been started during the last two decades. Probably of greater importance however is that medicine has switched from the local to the national scene and the importance of the State Journal as a medium of continuing education has declined. However, now with the emphasis on the future leaning towards regional plans of continuing education and regional control of federally supported Medicare and Medicaid programs, it seems to your Editor that it is more important than ever that the Journal be kept as the State Society or regional spokesman. Without the State Journal there seems no apparent means of communication within medical circles in the State of Delaware.

At the present, your Editors find themselves in an awkward position of having very little to edit. This brings us to the Journal's greatest problem, lack of material to publish. Your Editor would like to stimulate the membership of the Society to submit manuscripts, case reports, clinical investigations, literature reviews, letters to the editor, hobbies, etc. to the Journal for publication. Without your increased support, each month we find that there are fewer and fewer qualified articles to print. If the present trend is not reversed, we will find that we are unable to publish and your Journal will perish.

In Brief

Speakers on "Doctor's House Call"

Speakers for February, 1967, on the Tuesday radio program, (11:05 a.m., WDEL) produced by the Medical Society of Delaware are: Feb. 7: John F. Hynes, M.D., *Cancer Therapy;* Feb. 14: Frederick A. Bowdle, M.D., *Gout;* Feb. 21: Richard A. Kahlbaugh, M.D., *Pneumonia;* Feb. 28: Robert M. Marine, M.D., *Arteriography.*

Radio Seminar Curriculum

Radio Seminars conducted by the Pennsylvania Hospital present the current program for the month. These are being held at the Wilmington Medical Center, Memorial Division, every Tuesday at 12:00 noon with lunch being served. The course is approved for 24 Credit Hours by the AAGP. Sydney Stat, M.D., is moderator.

Feb. 28 - Mar. 2: *Medical Treatment of Hypertension*, John H. Moyer, M.D., Professor of Medicine, Hahnemann Medical College.

March 7, 9: *Treatment of Tuberculosis*, Peter A. Theodos, M.D., Associate Professor of Clinical Medicine, Jefferson Medical College.

March 14, 16: *Emphysema*, Howard N. Baier, M.D., Associate Professor of Medicine, Temple University School of Medicine.

March 21, 23: *Genetic Abnormalities: Suspicion and Diagnosis*, Angelo M. DiGeorge, M.D., Associate Professor of Pediatrics, Temple University School of Medicine.

Chronic Obstructive Lung Disease

A program, offering out-patient, in-patient, and home care serivces for patients with chronic obstructive lung disease, is being sponsored by the Albert Einstein Medical Center and Moss Rehabilitation Hospital. Three facilities will be used: 1) Medical Center's Northern Division, at York and Tabor Roads; 2) Moss Rehablitation Hospital, on the grounds of the Northern Division, and 3) Medical Center's Community Medical Home Care Program. No patient will be refused because he is unable to pay. There will be two educational programs — one for medical personnel and the other for the public. Physicians, nurses, and other medical personnel will be taught the most effective techniques for diagnosis and rehabilitation of chronic obstructive lung disease. Critera for admission to the program are: the presence of chronic pulmonary disease causing disability or limitation of activity; the absence of acute pulmonary infection or congestive heart failure; the absence of unrelated diseases which would prevent required activity; and motivation and willingness to participate. Age will not be a factor.

Cancer News on CML

Blood cells from a chronic myelogenous leukemia patient have been grown, for the first time, in long-term culture by PHS scientists at the National Cancer Institute. Both the abnormal chromosome characteristic of CML and a type of virus particle frequently found in other human leukemia cells were observed in the new culture. (*Journal of the National Cancer Institute, Dec.*)

Investigators carried out microscopic studies of the culture revealing the genetic abnormality known as the Philadelphia Chromosome in 23% of all cells. These abnormal cells were comparable in all respects to those usually found in bone marrow samples taken from patients with chronic myelogenous leukemia. Electron microscope examination of special cell preparations also revealed the presence of herpes-like virus particles in a significant number of cells in the medium size range.

PMA Foundation Trainee Program

The PMA Foundation will offer a limited number of medical student traineeships to provide medical students with an opportunity to acquaint themselves with the basic scientific knowledge in the area of clinical pharmacology. The stipend of $1000 for a three month period — or the equivalent of a three month period — will allow the student to intermittently space his assignment where necessary. The student must be sponsored by the group or department responsible for the research and training. Applications for this traineeship should be submitted by the appropriate representative of the medical school or university to the PMA foundation, 1155 15th St., N.W., Washngton, D.C., on or before Feb. 15, 1967. The application, in the form of a letter, should carry a statement from the sponsoring group outlining the plans for the student and a letter from the student indicating the reason he is interested.

The Month in Washington

Satisfaction was expressed with the overall operations, so far, of the health insurance program for the elderly by Social Security Commissioner, Robert M. Ball. He recommended a number of changes in the program: 1) He urged that Medicare benefits, which apply to persons 65 or older, be extended to 1.3 million disabled persons; 2) He said the major improvement needed in the Social Security Program is an "across-the-board" increase in benefits. President Johnson has announced he will seek a boost of about 10 per cent in Social Security benefits in the next Congress. Bed shortages were alerted in the nation's capital, in various New England states, and in most rural areas when the new medicare benefit of nursing home care went into effect January 1, 1967. An estimated 50,000 to 60,000 beds will be needed for extended care in nursing homes. The Commissioner's report on the first six months of medicare included:

. . . About 2.5 million elderly persons received free hospital care and 3.5 million benefited from medical services.

. . . Since Medicare began July 1, 1966, hospital occupancy increased 5 per cent, as expected. Thirty per cent of all hospital beds were occupied by those 65 or older at the end of 1966.

. . . About 6,700 hospitals now are participating in Medicare. About 250 hospitals were excluded because they did not meet minimum standards, and 75 hospitals because of racial discrimination.

. . . Payments to doctors and skilled medical personnel, such as radiologists, have taken too long.

. . . Overcrowding of hospitals in various "isolated" incidents.

. . . Almost all of 17.5 million persons who signed up for additional medical insurance at a premium of $3 maintained their payments.

Seventeen hospitals in five states were declared ineligible for federal funds. Alabama, Louisiana, Mississippi, South Carolina and Texas. Discriminatory practices found at the hospitals included the segregation of patients . . . an absence of negro physicians . . . and the segregation of training facilities.

Statistics on Drug Research

Expenditures on prescription drug research and development reached a new high, but fewer new products actually reached the market in 1966 than during any single year on record. The peak year was 1959 when 63 new products were introduced. Total research and development expenditures during 1966 were estimated by President Joseph Stetler of PMA at $400 million. Only 11 basic new products were marketed this past year. A PMA survey shows that a principal focus of the search by industry for new pharmaceuticals is on drugs acting on the central nervous system and sense organs. These include sedatives, stimulants, tranquilizers and analgesics.

Physician's Choice

The AMA opposed legislation that would make prescribing drugs by generic name mandatory under the federal program of medical care for dependents of military personnel. They stated, "The argument of generic perscribing versus trade name prescribing has been *heard, seen, and debated* in the committees of Congress. But as to one element of the discussion, almost all physicians agree. For a sound medical reason, the choice of whether to prescribe generically or by brand name should be that of the treating physician. No law should be passed which may compel him to use in every case, a generic or non-preprietary drug. Such a law would not be in the best interest of his patient."

Health Skills Training

Because of the critical nation-wide need for personnel in community hospitals and health agencies, hospitals of the PHS are intensifying training in a variety of health skills such as: dental assistance; laboratory aides; nursing assistants; food service, housekeeping, laundry or maintenance mechanics who may be employed in local hospitals and health agencies. The training techniques developed will be made available to all communities to assist in improving the delivery of health services.

Brief Briefs

- The daily birth rate this year in the nation's community hospitals reached a peak of 9,389 in September, a decline of nearly 5% over the peak month in 1965. (AHA)
- A permanent committee dedicated to the development, improvement, and marketing of flame-retardent clothing was proposed during the session of a Conference on Burns and Flame-Retardent Fabrics at the New York Academy of Medicine in December. Fabrics that are resistant to fire are particularly important in clothing for children, disabled individuals, and the elderly and very few of these flame-retardent fabrics are available.

Southeastern Surgical Congress

Delaware has recently been admitted to the geographic area of the Southeastern Surgical Congress. Qualified surgeons may obtain application forms from J. R. McNinch, M.D., 113 S. State Street, Dover, Delaware. Initiation fees are $50.00 for the first year and $25.00 per year thereafter. This includes subscription to *The American Surgeon.* Annual meetings are held in Miami and other southern cities. Excellent programs are always presented.

For Sale

A portable x-ray and fluoroscope is for sale. Reason for selling? Retired. Write if interested to: G. V. Wood, Jr., M.D., P.O. Box 363, Millsboro, Del. 19966. Tel. 394-7846.

Auxiliary Affairs

APPLE DAY CARE CENTER BEARS FRUIT*

A different kind of apple tree is flourishing in Cincinnati, Ohio. It doesn't grow apples. Instead, its fruit is 28,000 hours of professional hospital services restored to the community.

The *Apple Tree* is a children's day care center—but with "students" of a very special kind. They are the children of registered nurses and other key hospital personnel. The *Apple Tree* was set up specifically to take care of these youngsters so their mothers could return to their vital hospital jobs.

The seed for the Apple Tree was planted by Mrs. Richard D. Bryant, a member of the Woman's Auxiliary to the Cincinnati Academy of Medicine. She wanted to do something about the critical shortage of nurses and other professional personnel in local hospitals—a shortage that forced one Cincinati hospital to temporarily close a ward.

She knew that there was a reservoir of talent—if it could be tapped—in "retired" nurses kept at home by young children. If competent, economical care could be provided for their children, she wondered, would these "retirees" return to hospital nursing?

Mrs. Bryant presented her idea for a day care center to fellow auxiliary members. They immediately formed a steering committee—headed by Mrs. Bryant—to investigate the possibilities. Committee members spent many hours interviewing hospital administrators, consulting with public health officials and talking with nursing education specialists. They got financial backing, and it wasn't long before the Apple Tree took root.

Opened August 30, 1965, the Apple Tree was an instant success and now is operating close to capacity. So far, it has enabled mothers to go to work or continue to work in professional capacities at nine Cincinnati hospitals.

The Apple Tree is housed in Sunday school rooms leased from a church where there are cots for naps and kitchen facilities for lunches and snacks. Out-of-doors there's a fenced play area equipped with swings, a slide and teeter-totters. In a big, airy playroom children play with educational toys, games, colorful books, crafts, paints and paste, under professional supervision.

The Apple Tree's administrator holds a master's degree in child guidance. Its four-member staff of teachers includes a physician's daughter who is a graduate in pre-school education from Ohio Wesleyan University.

To qualify to enroll her children, an applicant must be employed by a hospital as a registered nurse or must be designated as a key professional by the hospital administrator where she is employed. At present the center can accomodate 30 three-to-five-year-old children in two sessions geared to the timing of the hospitals' nursing shifts.

Plans are being made for increasing the Apple Tree's staff and facilities to take care of more children. Another session may be added for the children of mothers working the night shift. When Cincinnati's urban renewal plans for a large medical complex take shape, space will be allotted for permanent accommodations for the Apple Tree.

In addition to registered nurses, other women whose health careers have been re-activated thanks to the Apple Tree include a physician, a nursing instructor, physical and occupational therapists, laboratory technicians, a radiologist and a research biochemist.

As for problems created by taking the

young mother out of the home to return to work, Mrs. George B. Haydon, new chairman of the Apple Tree's board of directors, says: "We have found that in many cases it has actually bettered family relationships."

"Many of the mothers have to work," she points out. "There is the mother of one Apple Tree youngster, for example, whose husband is disabled. She formerly had to board her four-year-old boy by the week—or else leave the youngster at home with her husband, who is confined to a wheelchair."

Licensed by the Cincinnati Board of Health, the center is incorporated under Ohio law as a non-profit institution. The mothers pay a nominal sum which covers tuition and a balanced meal and snack. Financial support has come from the auxiliary, the Medical Foundation of Cincinnati, local private foundations, medical specialty societies, a pharmaceutical company, a woman's club, a hospital auxiliary and individuals. These gifts took care of the Apple Tree's permanent equipment and rent for a two-year period.

"We're not yet self-supporting," Mrs. Haydon says, "but the red-ink is smaller each month.' '

The 15 members of the Apple Tree's board of directors are all auxiliary members. They met as frequently as three times a week to get the project off the ground.

Now, after a year of operation, hospital administrators are delighted with the results. Before the Apple Tree opened, three of them had considered establishing an employee child care center in their own hospitals, but in each case plans had been tabled.

The acute shortage of nurses and health career workers in almost every locality is well-known—especially to doctors' wives who may hear about it daily from their husbands. There are many communities that need day care service such as the Apple Tree is giving Cincinnati.

*—Reprint from *M.D.'s Wife*

Perhaps this could be a project for our Community?

CLINICAL NOTICES AND MEETINGS

Conception Control	A Family Planning Seminar for Physicians will be held at New York University Medical Center, Jan. 26-28, 1967. Tuition fee is $25. Make checks payable to. Margaret Sanger Research Bureau, 17 W. 16th St., New York, N.Y. 10011.
American College Of Cardiology	Annual Scientific Session of the American College of Cardiology will be at the Washington Hilton Hotel, Feb. 15-19, 1967. This meeting is open to all physicians. For advance registration, write: Mr. William B. Nelligan, Executive Director, American College of Cardiology, 9650 Rockville Pike, Washington, D.C. 20014.
Heart Association (Southeastern Penna.)	*The Metabolic Basis of Human Atherosclerosis* will be the subject of the sixth National Symposium sponsored by the Heart Association of Southeastern Penna. on Feb. 23 & 24, 1967, Sheraton Hotel, Philadelphia. Registration fee is $25 per person — including the cost of two luncheons and banquet. For reservations, contact: Mr. Lyle L. Perry, 318 S. 19th Street, Phila., Pa. 19103.
Home Care & Extended Services	The Montefiore Hospital and Medical Center, 111 E. 210 St., Bronx, N .Y. 10467, announces the 12th Institute on Coordinated Home Care, Feb. 15-17, 1967. Registration fee is $50 and will be limited in number to early registration.
American Academy of Allergy	*Leukocytes* and the *Autonomic Nervous System* will be the subjects of a two-day postgraduate course to be held Feb. 18 & 19, 1967, at the Holiday Inn — Riviera, Palm Springs, Calif. Write: The Executive Office, 756 N. Milwaukee St., Milwaukee, Wis., 53202, for information.

Guest Editorials

THE STEPCHILD IN THE PHYSICIAN'S ARMAMENTARIUM

Cancer from time immemorial has been known and feared. Only recently with better diagnostic acumen, better trained laboratory procedures and tests, has a minutia of progress been attained. It has been only by careful indoctrination of both patient and physician that the importance of the complete annual physical became a reality. Each year more and more people are requesting it. As this request becomes greater it behooves the physician to utilize not only all his skills, but also all important diagnostic aids, if a satisfactory survey is to be made.

For many years the prognosis of cervical cancer was poor. The routine use of the Papanicolaou cytologic smear, a very simple process, has made it possible to diagnose cervical cancer in it's incipiency. This has resulted in a greater 5 and 10 year survival rate.

What has happened to cancer of the cervix with the utilization of the "Pap" test can also come to pass in the case of rectal and colon cancer. All that is necessary is, in addition to a careful history and physical, once yearly to do a procto-sigmoidoscopic examination.

Procto-sigmoidoscopy is not new. It has been known for years. Only recently, however, has its real worth been recognized and its regular use been advocated. It is known that 75% of all rectal and colon growths, both benign and malignant are found in the lower 25 cm. of the gastrointestinal tract. The other 25% occur in other areas of the descending, transverse, ascending colons and cecum. Here Barium studies are necessary for diagnosis.

Many physicians feel an adequate digital examination is sufficient. Careful clinical investigators have proven, however, that only 12% of lower bowel cancers are palpable by the examining finger. It is possible, therefore, to miss 88% of these growths without the use of the procto-sigmoidoscope.

Since early detection is important to cure — it is obligatory that asymptomatic polyps and adenomatous growths be recognized early, biopsied and treated. It is the opinion of most surgeons and pathologists that these entities may be pre-cancerous, which makes it important to eradicate them early if the incidence of cancer of the colon is to be diminished. Statistics show that of all cancers in 1966, there was a greater predominance of colon cancer than of any other types. Statistics also prove that generally one in 10 adenomatous polyps will become malignant.

It is not the purpose of this editorial to present and discuss the pathological lesions, that are found in the lower bowel or to outline the technic and preparation for doing a sigmoidoscopic examination. Hospital libraries are filled with textbooks and scientific papers that cover these subjects adequately.

Instead it is a plea that each physician advise such an examination as a part of the yearly physical examination. Even though many people realize its worth there are many patients who still have to be indoctrinated. This indoctrination can only be accomplished if the physician is willing to take the time to carefully explain the importance of this diagnostic aid. If he is not adequately trained to perform the procedure, the patient should be referred to a specialist.

In conclusion, cervical cancer statistics have been improved by means of the routine use of the "Pap" smear. Many feel that routine yearly use of the sigmoidoscopic examination can bring about similar results in colon cancer. One cannot always reach the goal of complete cure, but in colon surgery it is possible — by using all aids — to almost totally eradicate cancer of the lower portion of the intestinal tract. All it takes is conscientous effort on the part of everyone. Early diagnosis and adequate treatment will turn a disease that is now most debilitating into one whose prognosis is excellent.

O.N.S.
President, Delaware Division
American Cancer Society

GRADUATE MEDICAL EDUCATION

A new look has been taken at the graduate education of physicians and recommendations presented in a report by the Citizens Commission on Graduate Medical Education (so-called Millis Commission Report).

The preface of the report contains the following statement:

> "*For any learned profession there are but two alternatives for establishing standards of practice and education. Responsibility can be assumed by society as a whole, operating through government, or can be assumed by the organized profession through a voluntarily accepted self-discipline. There are no other alternatives, for, if the profession does not take responsibility, society will surely demand that the vacuum be filled and the government assume the responsibility.*"

The personal or family physician has been given a new name by the Commission, that of the "primary physician."

Emphasis is given to some of the obvious educational needs, such as:

1. "*Medical knowledge has been growing so rapidly that no practitioner can safely rely on what he learned as a student, or consider his own resources as adequate for optimal patient care. It is now widely agreed that for a physician to remain highly competent his education must not terminate at the end of a formal residency, but must continue as long as he practices.*"
2. "*Now that there is so much to learn, specialization is essential.*"
3. "*Preventive care is neither as widely sought nor as widely practiced as it might and should be.*"
4. *There needs to be an emphasis on comprehensive care. This "will require major changes in faculty, facilities and attitudes."*

The report notes that hospitals vary markedly in commitment to training of young physicians. It is observed that many attending physicians have little interest in and little aptitude for teaching.

Other selected and significant statements are:

1. "*We recommend that each teaching hospital organize its staff, through an educational council, a committee on graduate education, or some similar means, so as to make its programs of graduate medical education a corporate responsibility rather than the individual responsibilities of particular medical or surgical services or heads of services.*"
2. "*We recommend that the internship, as a separate and distinct portion of medical education, be abandoned, and that the internship and residency years be combined into a single period of graduate medical education called a residency and planned as a unified whole.*"
3. "*We recommend that programs of graduate medical education not be approved unless the teaching staff, the related services, and the other facilities are judged adequate in size and quality,*

and that, if these tests are met, approval be formally given to the institution rather than to the particular medical or surgical service most directly involved."

4. *"We therefore recommend that a newly created Commission on Graduate Medical Education be established specifically for the purpose of planning, coordinating and periodically reviewing standards for graduate medical education and procedures for reviewing and approving the institutions in which that education is offered."*

L.C.M.

A NEW BREED OF GENERAL PRACTITIONER

A report of the Citizens Commission on Graduate Medical Education known as the Millis Report gives a detailed ". . . examination of the vacuum left by the disappearance of the family physician or general practitioner and the Commission's recommendations for the structuring of teaching programs in medical schools and teaching hospitals to develop physicians trained in comprehensive health care."

The report gives statistics which show conclusively that the percentage of general practitioners is decreasing alarmingly. It stresses that something must be done to fill the vacuum. It proposes training a new type of general practitioner to be known as primary physician or family physician to give comprehensive and continuing medical care to the full family, and to stress disease prevention and rehabilitation after disease or injury. There is to be a three year training program after medical school emphasizing this comprehensive care. The primary content of this graduate education is to consist of medicine, psychiatry, pediatrics, medical gynecology and preventive medicine. The report suggests that the ideal place for the primary physician is in practice with a group of other family physicians. Here there is available constant consultation, constant coverage, and complementary skills. The Millis Report also proposes establishment of comprehensive care centers both in university medical school hospitals and in community hospitals. These are to be both out-patient and in-patient facilities, and will follow patients and their families through health and sickness.

The American Academy of General Practice has for years been working in this direction. It deplores the gradual disappearance of physicians oriented for treating the whole patient and the whole family. It is finally receiving recognition for its program and is directing the machinery to set up a specialty board in family practice, delineate goals, establish approved residency programs, and attract applicants. This will be a three year after medical school graduation program. There will be no grandfather clause. Older general practitioners who have not had the three year residency training will be certified only by special examination. Any physician who has been certified will be required periodically to undergo re-examination to retain his certification.

The American Academy of General Practice program differs from that of the Millis Report in that the general practice program stresses the inclusion of obstetric training. The General Practice Academy wants to treat the whole patient and does not feel that normal obstetrics can be excluded.

All of this is the official position as of now of the Citizens Commission and of the American Academy of General Practice. What are our local reactions? I was asked by the editor of the Delaware Medical Journal to write this in order to start a discussion of the views on the subject of the general practitioners in this community.

I for one am pessimistic of the success of the proposed three year general practice residency program. I am sure that a wonderful program will be established; but it is one thing to have a program, another to have medical students go into it. For many years at the Wilmington General Hospital we have had a first rate general practice residency program. Although we were approved for 12 residents for each year, we have never had more than one at a time and often none. Indeed, this proposed elaborate three year residency program may backfire. It will create two classes of general practitioners, and by so doing may discourage the young man who under other circumstances might go into general practice from an internship. Who would want to be a second class citizen?

The Millis Report makes much of the proposed comprehensive care centers in the hospitals as a base for superb work of family physicians. Granted the present complex specialty oriented structure of our local hospital center, this is a distant dream. This past year the General Practice Department of the Wilmington Medical Center proposed it be given autonomy to operate a family practice clinic and the request was granted. Then one by one the specialty departments claimed what was theirs, until we ended up collaborating with the Department of Medicine in a general medical clinic.

I agree completely with the Millis Report that the best way for the general practitioners to work is in group practice. I would like to see it go a step farther and to have some of the presently operating groups, or others, join together so that general practitioners' offices might be operating 24 hours around the clock.

Continuing education for the practicing general practitioner is one of the most important needs. This is supplied not only by our Center's programs, but very actively by our Delaware Academy of General Practice, which throughout the year conducts a variety of courses and seminars. We must work toward involving more of our members in these.

There is one final problem and it is a great one. Because of the clinical specialization of our Wilmington Medical Center structure, there is a temptation "in the interest of better patient care", as the saying goes, to delineate specifically the clinical fields in which general practitioners can be active. In the past in our hospitals a general practitioner was privileged to treat the total patient regardless of his disease as long as he remained in his competence and used good judgment to request consultation when necessary. I hope the time will not come when every clinical department will require each general practitioner to seek courtesy privileges separately in each department, and not let him treat his patient without a consultant peering over his shoulder at every step. I do not mean that over-all department supervision in its field should be abandoned; but if a general practitioner has been doing good clinical work for many years in a given field, he should not by a concoction of new rules be given second or third grade status. The Millis Report says that the family physician must have ". . . a firm knowledge of and access to the whole range of medical services of the community in order to give comprehensive and continuing health care."

It is my hope that the Wilmington Medical Center will give more than lip service to this goal.

David Platt, M.D.,
Director, Department of General Practice
Wilmington Medical Center

CLINICAL NOTICES AND MEETINGS

Spring Congress at Roanoke	The Annual Congress in Ophthalmology and Otolaryngology will beheld April 3-7, 1967, at the Gill Memorial Eye, Ear, and Throat Hospital, Roanoke, Virginia. For further information, write: Superintendent, P.O. Box 1789.
American College of Physicians	ACP presents: *Psychiatry for the Internist,* March 27-31, at the Wayne State University of Medicine, Detroit, Michigan. Meeting place: The Lafayette Clinic. ACP presents: *Fundamental Concepts of Gastroenterology,* March 20-24, University of Michigan Medical Center, Ann Arbor, Michigan. Meeting place: Medical Science Building. Fee: Members, $60; Non-members, $100. For information: Edward C. Rosenow, Executive Director, ACP, 4200 Pine St., Phila., 19104.

Delaware Medical Journal

FEBRUARY, 1967

VOLUME 39

NUMBER 2

THE USE OF HEXANICOTOL* (Inositol Niacinate) IN PERIPHERAL VASCULAR DISEASE

● The vasodilator effect of hexanicotol, inositol niacinate was studied in 16 patients. Prolonged vasodilator effects were delayed until after 14 to 21 days of therapy. There was no flushing noted in any of the patients. The effect of body heat and smoking was also studied and recorded plethysmographically. Vasospastic and arteriosclerotic occlusive diseases were studied in this series.

By Arthur J. Heather, M.D.

Hexanicotol, inositol niacinate, is a hexanicotinic acid ester of meso-inositol. It consists of 6 molecules of nicotinic acid and 1 molecule of inositol. The drug has been used in the treatment of acne as a complementary agent in the therapeutic regime. Also, inositol niacinate has been evaluated clinically as a vasodilator by several investigators. Hamilton[1], Lindquist[2], and Berge et al[3], among others, studied the compound in various types of peripheral vascular diseases. The investigators found that it prolonged the vasodilator effects of nicotinic acid without the undesirable side effects.

The study described here is one in which plethysmographic variations in blood flow were recorded. These were in response to the use of inositol niacinate in organic and vasospastic peripheral vascular diseases.

This investigation was conducted from December 1965, through March of 1966. The cold weather months were chosen deliberately to better evaluate the effectiveness of inositol niacinate as a vasodilator in peripheral vascular diseases. As is well known, during winter the peripheral vascular disease patient has his most difficult time.

The routine used in the study was carried out as follows: Each patient was placed in a room in which the temperature varied only one to two degrees F. daily during the time the studies were conducted. The subject removed his outer clothing down to the undergarments. He was covered with a sheet and allowed to rest for fifteen or twenty minutes before the examination. Following the rest period, the plethysmographic studies were made and the graph labeled basal blood flow.

Next, a large hydrocollator pack wrapped

Dr. Heather is Medical Director, Eugene duPont Memorial Hospital and Rehabilitation Center; Section Chief, Department of Physical Medicine, Memorial Division; Associate in Medicine (Physical), Delawre Division, Wilmington Medical Center; and Consultant in Physical Medicine, Delaware Curative Workshop, Wilmington, Delaware.

*Hexanicotol, Inositol Niacinate (Hexanicotinyl Cis-1,2,3,5 Trans 4,6-Cyclohexane) The Dietene Company, Inc., Minneapolis, Minn.

in towels was placed on the patient's abdomen. The lights were dimmed and he was covered with three wool blankets and heated for sixty minutes. The plethysmographic tracing was repeated and the record labeled post body heating graph. Frequently the patient relaxed sufficiently to sleep during the body heating session. After recording the post-body heating blood flow, some smokers were permitted to smoke as heating continued. The tracing was then repeated 5 to 8 minutes after smoking a cigarette. In several instances the effect of tobacco on the vascular system was dramatic. Pulse volume decreased sharply and the pulse rate increased (Fig. 1). On two occasions the post-smoking record so impressed the subjects that they stopped smoking.

The apparatus used in the study was a 2 channel impedance plethysmograph.[4] The use of impedance plethysmography as a means of electrically recording changes in tissue volume is based on the fact that the impedance of any conducting material is inversely proportional to its cross sectional area and directly proportional to its length. As volume increases impedance to electric current decreases, and conversely a decrease in volume increases impedance.

Organic peripheral vascular disease frequently has an added component of vasospasm due to high central vasomotor tone. The elimination of this spastic element improves the blood supply to the diseased member. Body heating with its resultant flow of warmed blood to the hypothalamus temporarily obliterates the vasoconstrictor effect. This permits a qualitative differential to be made between the organic and functional elements of the disease. Relief of the vasospastic component frequently results in pronounced benefit to the patient.

With only minor modifications Poiseuille's Law* applies to arteries as well as non-elastic tubes. This law states in part: "The rate of flow varies as the fourth power of the radius of the vessel," other factors remaining constant. The importance of this law is best appreciated when one realizes that any measure resulting in the dilation of an arteriole to twice its original radius increases blood flow not twice, but sixteen times. Conversely, the reduction of the lumen of a vessel by one-half reduces blood flow sixteen times below its original level. The sudden and dramatic onset of the signs of impending gangrene in a well-compensated peripheral vascular disease patient are more easily understood when one realizes that minor changes in the lumen of a vessel result in profound alterations in blood flow.

The plethysmographic records included in this paper illustrate qualitative changes in pulse volume which occurred during the study. In upper extremity examinations the index fingers were used for study. The great toe was used in lower extremity determinations. A 4 cm. section of finger or a 2 cm. of great toe were tested. The electrodes were 1/4 inch wide aluminum foil attached to 3/4 inch wide plastic tape.

Blood flowing into the section of the digit between the electrodes results in lowering the impedance. Conversely, as blood left the digit, impedance increased. The technique records a change in the volume of the segment under study and provides a graphic record of pulse volume change in response to drugs, heating or other agents such as tobacco smoke and placebos. In this study no claim is made for quantitative blood flow measurements. We recorded the changes in pulse volume in each test subject in response to inositol niacinate or placebos, both at basal conditions and after body heating.

After the basal studies were done at the first examination, inositol niacinate 1800 mgm. every six hours was started (6:00 a.m., 12:00 noon, 6:00 p.m., and 12:00 midnight). Follow-up studies were repeated under the same conditions as outlined previously at 10 to 14 day intervals. After the maximum vasodilation had occurred, placebos were substituted for inositol niacinate without the patient's knowledge. Plethysmographic measurements were continued and after the response of placebos was recorded, inositol niacinate

---

*Poiseuille's Law: The rate of flow of a liquid through a tube of cylindrical cross section is found experimentally to be proportional to pressure differences between the ends of the tube (p), inversely proportional to the length of the tube (l), and proportional to the fourth power of the radius (r).

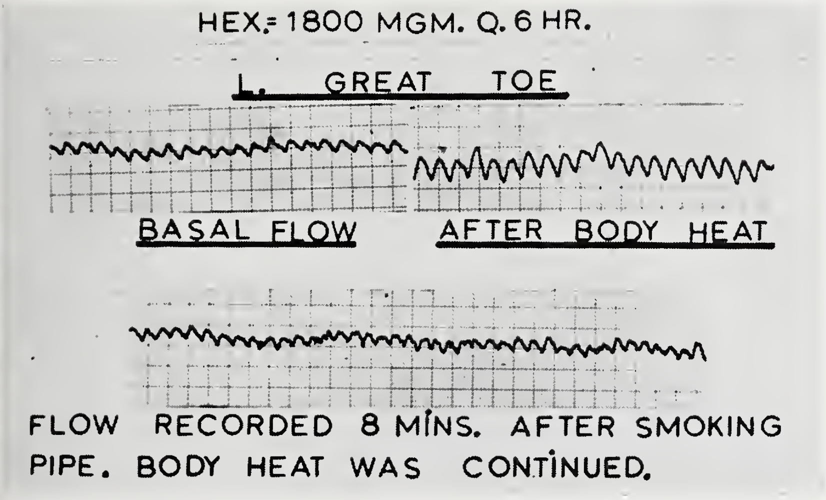


Figure 1
The vasoconstrictor effect of tobacco is graphically illustrated. The pulse rate increased from 72 to 84.

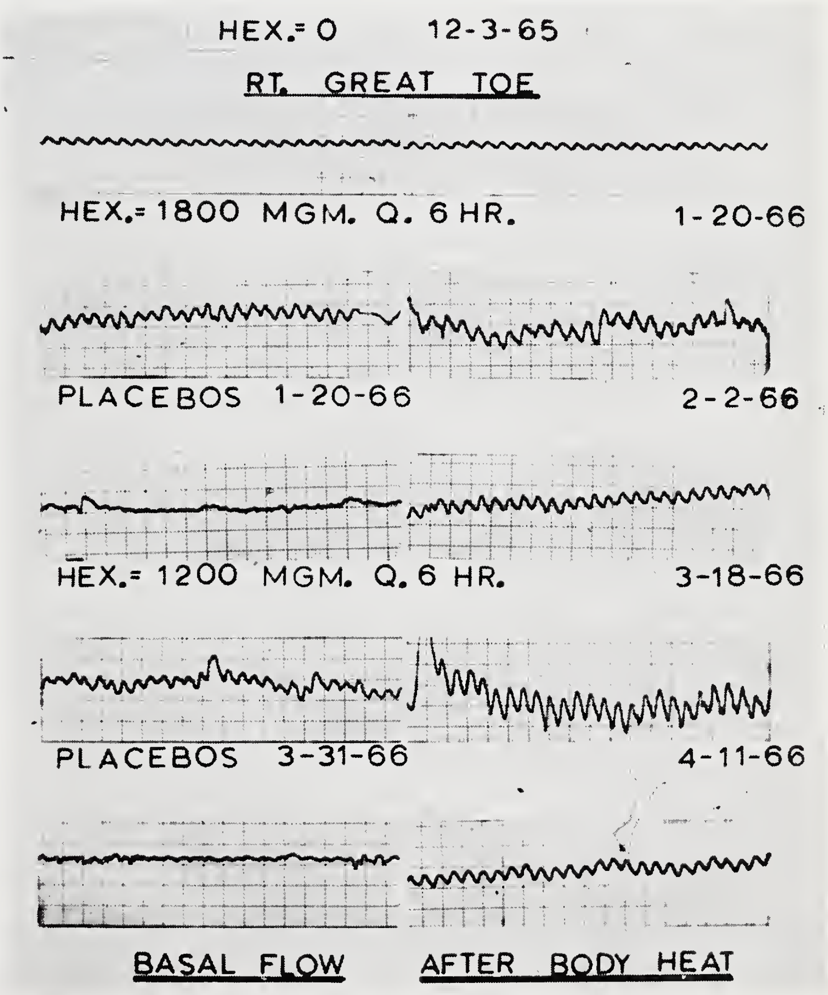


Figure 2.
Patient No. 10 illustrates the vasodilation response to the test drug in the second graph made on 1-20-66. After the test was done, placebos were submitted and the results recorded 2-2-66. The drug was again administered and vasodilation resulted. The bottom graph again illustrates the the placebo response.

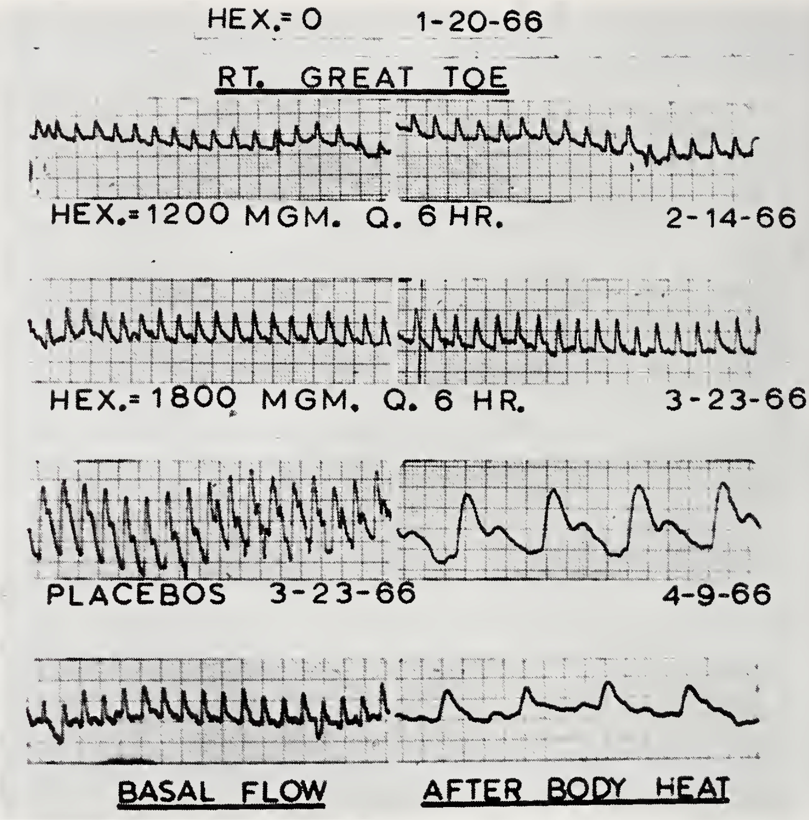


Figure 3
Patient No. 8, illustrates the maximum response to Inositol Niacinate recorded 3-23-66. Placebos were started the same day and the response was recorded 4-9-66.

replaced the placebo. In some subjects placebos were substituted twice for the test drug. The placebo-niacinate substitution response is illustrated in the following graphs (Fig. 2 and 3).

In addition to the plethysmographic studies the 16 subjects were evaluated clinically. Fifteen stated that they "warmed-up" much more quickly after being outside. Also, most Raynaud's Disease patients volunteered the information that they could remain outside the house for longer periods of time before the onset of hand pain.

Patients suffering from arteriosclerotic obliterative disease of the lower extremities stated that their feet warmed more quickly after exposure to cold and they could walk farther before the onset of leg cramps.

In two patients, the dosage of the drug was discontinued or reduced due to signs of gastric irritation manifested by epigastic pain or burning and nausea. One of these was a 67-year-old man who had a subtotal gastrectomy performed because of peptic ulcer. The other subject was a 53-year-old woman who had a history of poor tolerance to many drugs. The inositol niacinate was tolerated in a dosage of 600 mgm. three times daily in the latter case. It was discontinued in the male patient. There were 10 males and 6 females in the series studied. The average age for the females was 56.5 years. Four of the 6 subjects were diagnosed as having Raynaud's Disease. There was no evidence of collagen disease present in these subjects. Both of the remaining 2 females had arteriosclerotic occlusive disease of the lower extremities. The 10 males ranged in age from 40 to 70 years with an average age of 60.9 years. All were diagnosed as having arteriosclerotic obliterative disease.

In April 1965 one of the test subjects (No. 1) underwent extensive surgery. This consisted of a right iliac and aortic endar-

CHART

Patient	Sex	Age	Diagnosis	Medical History	Clinical Response
No. 1	F.	54	Arteriosclerotic Occlusive Dis.	Apr. 26, 1965-Rt. iliac & aortic endarterectomy. Left femoral-aortic bypass graft.	Improved. L. foot warmer. Cramps and claudications relieved.
No. 2	F.	53	Raynaud's Dis.	Symptoms since childhood. More severe past 4-5 yrs.	Improved. Hands less painful when outside. Gets warm much more quickly after exposure to cold.
No. 3	F.	51	Raynaud's Dis.	Symptoms onset at age 14 yrs.	Improved. Hands less painful when outside. Gets warm much more quickly after exposure to cold.
No. 4	F.	69	Arteriosclerotic Occlusive Dis.	Symptoms noted Jan. 1966. Injured toe, difficult healing.	Improved Toe healed. Able to walk much farther. Claudications rare.
No. 5	F.	46	Raynaud's Dis.	Symptoms onset at age 20 yrs. Increased in severity. Ulcers on 4 finger tips.	Improved. Less pain. Ulcers healing. Moved to Fla., stopped medicine—symptoms increased. Drug restarted and symptoms again improved.
No. 6	F.	66	Raynaud's Dis.	Onset 1959. Now involves hands, feet, ears and tip of nose.	Improved. Less night pain in hands and feet. Warms more quickly after exposure to cold.
No. 7	M.	57	Arteriosclerotic Occlusive Dis.	Symptoms — 8 yrs. Increased in severity. Claudications and anginal pain after walking 1½ blocks.	Improved. Walks 4-5 blocks. Discharged on 1200 mgm. of drug, q. 6 h.
No. 8	M.	69	Arteriosclerotic Occlusive Dis.	Symptoms Winter 1964. Had coronary occlusion Oct. 1964. Night cramps, claudications—severe after walking 1-2 blocks.	Improved. No night cramps. Claudications — same. Feet warmer.
No. 9	M.	70	Arteriosclerotic Occlusive Dis.	Cold feet. Claudications 7 yrs. duration.	Improved. Feet warm. No claudications. 1965 College reunion parade rode in "old men's car." 1966 reunion walked entire parade.
No. 10	M.	52	Arteriosclerotic Occlusive Dis.	L. Below-knee amputee. Int. Carotid Art. endarterectomy. Claudications severe— 1/3 block, angina on exertion.	Improved. Walks 2-3 blocks without claudications. Less anginal pain.
No. 11	M.	62	Arteriosclerotic Occlusive Dis.	Claudications and angina.	Improved. Walks much farther before claudications. Less anginal attacks.
No. 12	M.	60	Arteriosclerotic Occlusive Dis.	L. Above-knee amputee.	Unchanged. Slight improvement for 2-3 weeks then reverted to pre-treatment status.

CHART

Patient	Sex	Age	Diagnosis	Medical History	Clinical Response
No. 13	M.	67	Arteriosclerotic Occlusive Dis.	Subtotal gastrectomy.	No improvement. Could not tolerate medication.
No. 14	M.	62	Arteriosclerotic Occlusive Dis.	Rt. Above-knee amputee. Aug. 1964.	Improved. Claudications stopped in L. leg. Foot warmer. Hair again present on foot and toenail growth increased.
No. 15	M.	70	Arteriosclerotic Occlusive Dis.	Gangrene — 1st and 5th toes.	Improved. Old ulcers healed, rest pain stopped and claudications reduced.
No. 16	M.	40	Arteriosclerotic Occlusive Dis.	Diabetic and Rt. below-knee amputee.	Improved. Less night pain and claudications.

terectomy and a left femoral-aortic bypass graft. She did well until the winter of 1965, when symptoms increased in the right leg. However, the use of inositol niacinate resulted in both symptomatic and plethysmographic improvement in blood flow to the involved extremity. This response is typical of 14 of the 16 patients studied.

The following chart lists all the patients according to age, sex, diagnosis, brief medical history and, finally, clinical response to the drug.

In summary, 16 patients were included in the evaluation of inositol niacinate as a vasodilator in peripheral vascular disease. Fourteen patients (87.5%) showed both graphic and clinical evidence of improvement in blood flow. Two patients (12.5%) were unimproved. One of these showed moderate graphic improvement for about 3 weeks but then lost all beneficial effects of the drug. The other test subject was unable to tolerate the drug due to nausea and epigastic burning. This patient had a subtotal gastrectomy performed because of a duodenal ulcer. All other subjects except one tolerated the drug without adverse side effects. In this latter case a reduction in dosage to 300 mgm. every 6 hours was tolerated.

We found that the maximum increase in pulse volume occurred in 2 to 3 weeks after the institution of therapy. However, the placebo effect was observed in 5 to 10 days. In no patients did flushing occur during the study. Dosage of the drug was reduced in most subjects as the study progressed. It was found that a dose of 600 to 1200 mgms. of Inositol Niacinate given at 6 hour intervals maintained the beneficial effects in most cases.

REFERENCES

1. Hamilton, R. R.: Peripheral Vascular Disease in General Practice: Some Experiences with Meso-inositol-hexanicotinate. Practitioner 184: 367, 1960.
2. Lindqvist, T.: Klinisk prövning av hexanicit ett nikotinsyrapreparat med largvarig effekt, Svenska läk, tidn. 55:1-15, Jan. 3, 1958.
3. Berge, T., and Johansen, E.: Hexaniacit in the Treatment of Arterial Insufficiency in the Lower Extremities. Svenska Läkartidningen 55: 3453, 1953.
4. Heather, A. J.; Graebe, R. A., and Walsh, R. R.: An Improved Two-Channel Impedance Plethysmograph — Clinical Applications. Two-Channel Impedence Plethysmograph—Clinical Applications. Bul. Del. Curative Workshop. Vol. 2, (Nov. 1965).

Theater Service For Out-of-Towners

A new, combined theatre-ticket- transportation service for theatre-bound visitors to New York City has been inaugurated through the Barclay, Biltmore and Roosevelt Hotels. It provides personal chauffered limousine service from the hotels to any theatre and back for $5.00 per couple with the purchase of theatre tickets through the hostelries. Limousines will pick up at the exact time specified at hotels and later at theaters.

PREDICTION OF ADULT STATURE

• Physicians are frequently requested to predict the ultimate height of normal children. The various methods for prediction of adult stature are reviewed and briefly discussed. Because adolescence usually marks the end of rapid growth, the age of its onset is most important in the determination of adult height. Three illustrative cases are presented.

Bernadine Z. Paulshock, M.D.

One of the problems presented with reasonable frequency to anyone caring for young patients is a query regarding height potential. The question most often arises in late childhood or early adolescence and is usually not raised by the patient himself but by the parents who are worried about a daughter becoming undesirably tall or a son remaining undesirably short.

This discussion pertains particularly to the phenomena associated with adolescence and reviews the methods available for growth prediction in normal children — that is, children without endocrinopathy such as hyperfunction or hypofunction of adrenal, thyroid, or pituitary, and without gonadal dysgenesis of any type. We are thus limiting the endocrine factors involved to those of normal adolescence with normal potential for the ultimate production of male or female sex steroids.

The diagnosis of a normal but delayed growth pattern from an abnormal situation may be especially difficult at adolescence because of the wide variation in the timing of onset of adolescence. In a center to which many adolescent height problems are referred, the predominance is short boys in whom the diagnosis is most often constitutional delay of adolescence. Among the short girls, who are markedly fewer in number, the diagnosis is more apt to be an organic one such as gonadal dysgenesis, although if the complaint is of excessive tallness in a girl the diagnosis again is more likely to be one of normality.

For the physician attempting to establish for himself a conceptual range for normal height it is important to realize how variable may be the limits of normalcy even within a single individual's life span. About one-third of the freshman class of Yale is now taller than six feet; before 1900 only five percent were this tall. Women in this country are similarly taller; more than one of ten women now grows to be more than five-seven; before 1900 less than three per hundred did so.[1] Ethnic variations cannot be ignored although they may in part reflect adequacy of nutrition. For example, Philippine women even of upper socio-economic status are seldom taller than 64″. The London Economist recently stated that Japanese boys in Japan are growing five to nine inches taller than their fathers. A sex difference in growth rate is apparent from infancy. It has been said that at birth girls are ahead by two weeks, at mid-growth by several months, and

---

Dr. Paulshock is an Associate in Medicine and Attending Physician, Endocrine and Metabolic Clinic, Wilmington, Medical Center.

throughout adolesence by two years.[2] In addition to the fact that girls do their adolescent growing earlier, their growth spurt is definitely less marked in degree than males and stops earlier. Maximal growth rate in most females occurs a year before menarche and thus the occurrence of menarche is a most important factor to be considered in prognosticating an individual girl's ultimate height. A girl who is tallest in her class at nine years old, if she is developmentally accelerated as well as tall and menarche is quite early, may not end up among the tallest group of her age peers at high school graduation.

Lowering of Menarcheal Age

Menarcheal age has been steadily declining in the United States. It averaged over 14 years in the nineteenth century but fell to thirteen years by 1900. In the first two-thirds of this century a steady decrease of three to four months each decade has been noted.[1]

Ultimate growth achievement thus bears a relationship both to the rate of early growth and to the age of onset of maximal growth. Their relationship has been most closely evaluated by Reed and Stuart. Their analysis of many growth patterns shows that rapid growth during the first six years of life is followed by early maximal growth in the majority of children and show early growers almost always have their maximal growth relatively late, thus allowing them catch-up time.[3]

Absolute growth post-menarche was recently assessed in 408 girls. 83% (339) grew less than 4 inches after menarche. Of the 17% (69) who grew more than 4 inches, 22 were classed as early growth failures — a nice demonstration of the intrinsic wisdom of natural phenomena. The tall girls in this study (over 66 inches) numbered 37% (222); half of them matured at an average age but one-third of them had menarche later than age third of them had menarche later than age thirteen. Of the 14% who were short girls (under 62 inches) the menarcheal ages were rather evenly spread.[4]

The standard growth charts which we are accustomed to using assume menarche to be about the age of 13 years and this is the point at which the median curve slopes off on the growth charts in common use. Those which are available from Ross Laboratories are prepared from the data compiled by Reed and Stuart. The Mead-Johnson charts from the same data can be graphed only to age twelve.

Methods for Predicting Height

For predicting the probable adult height of any individual patient three general methods are available. One may estimate based on the heredity of the individual patient in question. How tall are the parents and their sibs, the grandparents, and the patient's own siblings? Have there been any relatives atypically taller or shorter than the usual family pattern? A prediction formula for height expectancy based on the parents' height was devised by Horace Gray.[5] Although of limited value this Mid-Parent Rule may be especially useful in the evaluation of a child who is a product of second or third generation American, with a stable socio-economic status between generations. It is also helpful in explaining to parents that a certain height, or lack of it, is to be expected by the particular child's heredity. To estimate a girl's probable height by this rule her father's height is reduced to 12/13 (92.3%) before averaging with her mother's height. To estimate a boy's probable height, his mother's height is increased by 13/12 (108%) before averaging with his father. Thus a girl with a father 72″ and a mother 64″ would be expected to be $\frac{(.923)\ (72)\ +\ 6 = 65''}{2}$ tall. Gray's error in using this method averaged about 3% and ranged from 8% too small to 1.5% too large.

A second and more valuable method of prediction is simple inspection of the graph of a particular child's growth from birth. Barring some unusual event such as an illness which might delay growth, a child can be expected to follow along his own growth line. But if the onset of menses is delayed or unusually early, or if the child's pattern of growth after menses is atypical, the curve may not level off at the place in which it is expected to and a height which was predicted for the child before the onset of menarche will be in error. At 2 3/12 years, children are roughly one-half grown; by 2 6/12 years, they are normally 50% of their expected adult height. A five-year old girl and a six-year old boy have attained approximately two-thirds of their adult heights.

The third method is to predict ultimate height from tables. Tables for height prediction have for accuracy in the past 15 years or so been made from longitudinal data as opposed to cross-sectional data. (Cross-sectional data is obtained by averaging height of a group of one age, often a heterogeneous group which may not include the same individuals for each age given in the table. Longitudinal data is acquired by following the same child or children at regular intervals.) In our present school system a set of longitudinal measurements is available for every school child although it may not be of the best precision as many schools do not include the month in which the child was measured but the academic year only and if the child is in a rapid growth period whether his turn for measurement comes in September or at the end of the year in June may well make a significant difference. In addition, the measurements throughout the school years are done by different people, on different scales, en masse and hurriedly. The measuring bar on most any scale can be easily jiggled from the perpendicular and so it is more accurate to measure height against a wall using a T-square to make sure that the measuring bar is perpendicular or to attach a small bubble level to the lever. When tables are to be used there is an advantage to having height measured near the child's birthday to avoid having to extrapolate.

It is surprising how few longitudinal studies there are in the literature. Nancy Bayley and her colleagues are the authors of the tables for height prediction which are most commonly used.[6] Her data was originally based on a longitudinal study of fifty-one children whom she followed from birth through adolescence and longer. At present she is revising her tables based on data from Stuart's 1959 study. In the next several decades even larger series utilizing longitudinal techniques will be available and the present tables may be changed significantly. Dr. Bayley's data suggest that height can be predicted with great accuracy at any time during a healthy child's life, except possibly during his adolescent growth spurt. The standard error of prediction in adolescence decreases greatly in her hands if skeletal age is established. She recommends that left hand x-rays be used for skeletal age assessment and believes that with experience a hand x-ray can be dated within three months by using Todd's hand *Atlas*, but specifically, the 1952 revision by Greulich and Pyle of Todd's 1946 *Atlas*. These tables predict the percent of mature height at every bone age within three months from birth through adolescence. It is, however, discouraging to a non-radiologist to see how few and subtle are the differences in wrist films of children ages 11 to 13 years.

The Controversy of Bone Age

The entire subject of bone age and its accuracy is a controversial one. Most radiologists are reluctant to commit themselves more than within a year or so when asked to read bone age especially from a hand film only. Physicians who have occasion to be interested in bone age with any frequency generally interpret their own films. The hand is most commonly used and there is at least one study in the literature which suggests that the difference between wrists in the same individual is small, averaging more than three months in only 13% and more than six months in less than 2%.[7] At the Johns Hopkins Hospital, for example, when bone age films are requested by the pediatric department, it is routine for shoulder, elbow, wrist, hip, knee, and foot to be x-rayed at a cost of $30.00 There is no atlas available for reading such films; most of the tables available are diagramatic,[8] and although it may be true that this more extensive series is necessary prior to adolescence or with marked delay, by and large, a wrist film is apt to be sufficient. In females the epiphyses of the distal phalanges usually unite within the year following menstruation so that when menstruation is delayed, the presence of disappearing distal epiphyseal spaces may be of some value in anticipating incipient menarche. Interpreting bone age from hand films at adolescence is largely a matter of digital fusion, the contours of the metacarpals and the metacarpal articulations with the radius and ulna. Younger bone film interpretation takes into strongest consideration the developing of ossification centers.

There are six Bayley tables, three each for males and females. They give percent of mature height and the observed standard deviation at each three months of chronological age for children whose bone age is within a year of their chronological age, for children whose skeletal age is retarded more than a year, and for those whose skeletal age is advanced more than a year. They are also available in Todd's *Atlas* and partially in Nelson's *Textbook of Pediatrics* and in Gallagher's *Adolescent Medicine*.

To summarize, normal human growth is affected by so many factors, many not readily subject to clinical assessment, that growth prediction is frequently inaccurate, especially when adolescence occurs earlier or later than average. Available prediction methods include consideration of heredity, examination of the individual's already demonstrated growth pattern, and prediction from tables. Prediction from tables which take into account skeletal age may decrease error of prediction but assessment of skeletal age within fine limits is not easily done.

Several case reports which demonstrate clinical application of these methods follow:

Case 1

Age 12 10/12 years this patient was reluctantly brought in by her mother because of her fear that the patient would become too tall as she had grown 5″ during the past year. At this time she was 63″ tall, breast development was stage 2,[2] a moderate amount of axillary hair was present and pubic hair was stage 3.[2]

Her mother is 68″ tall and had a late menarche. Her father is 76″ tall and had a sister over 72″ in whom menarche was delayed to age 15.

The patient's height expectancy by the Mid-Parent Rule is 69″. Previous height age data were obtained from her pediatrician and charted (Figure 1 open circles). Using Bayley's tables, height prediction at 6 years was 66″; at 8 years 65″; at 12 10/12 years, 66″.

The patient and her family were advised they might expect an adult height of approximately 66″ unless menarche was unusually delayed and in view of the patient's growth spurt the previous year and the degree of secondary sex development, menarche seemed imminent within the year.

At 13 3/12 years when menarche had not yet occurred bone age was determined from a left hand film and showed no delay. Menarche occurred at 13 10/12 years at which time height was 64″ and she had not grown in the preceeding 6 months.

Since most girls grow no more than 3 to 4 inches post-menarche, ultimate height in Case 1 is not apt to be greater than the maximum of 70″ and may well be one or two inches less, completely within contemporary socially acceptable limits.

Case 2

This patient, a healthy male, is an only child. At 15 he is 64″ tall. A recent article in *Life Magazine* which described growth in a true pituitary dwarf following administration of human growth hormone (HGH) was very exciting to him and his parents.

His mother is 62 inches; his father, 68 inches. He is athletically inclined and his parents and he would be happy if he were to grow to be over 6 feet tall. The Mid-Parent Rule, however, predicts a height expectancy of 68 inches. His data from infancy is charted in figure 2. Note how regular is the slope of his own growth. From Bayley's charts his height expectation at 7 years was 67″, at eleven years this prediction was unchanged. At the present time he has developing secondary sex changes without beard, a stage of development similar to the majority of his age peers.

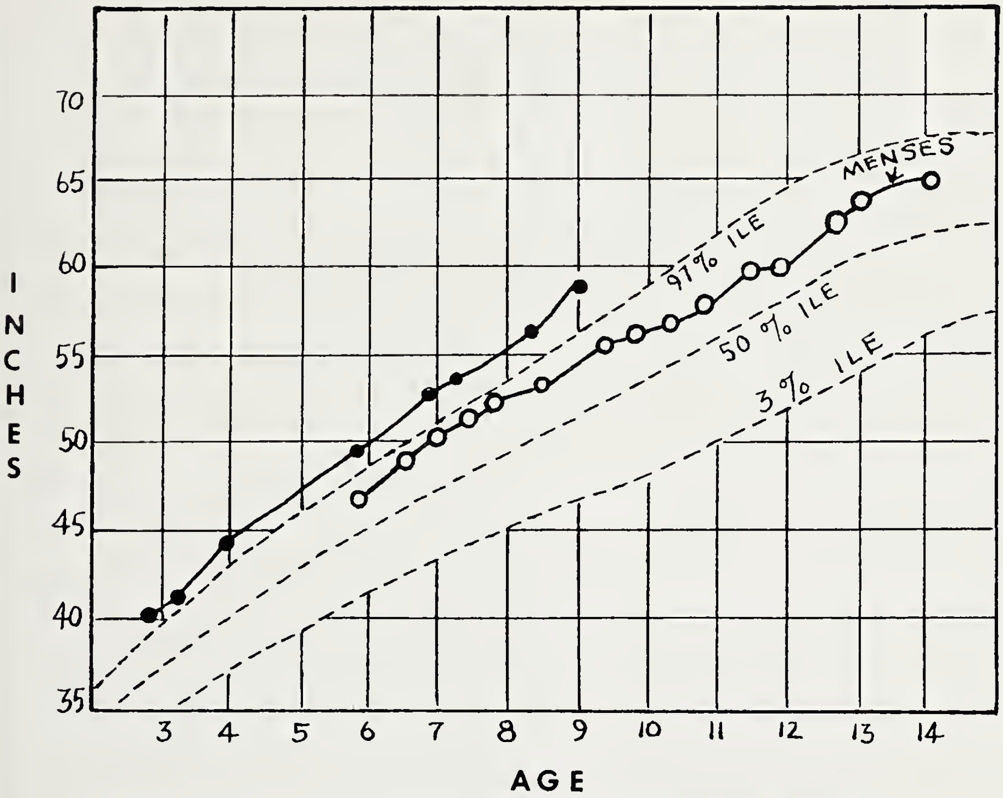


Figure 1

Case 3 ●—●

Case1 ○—○

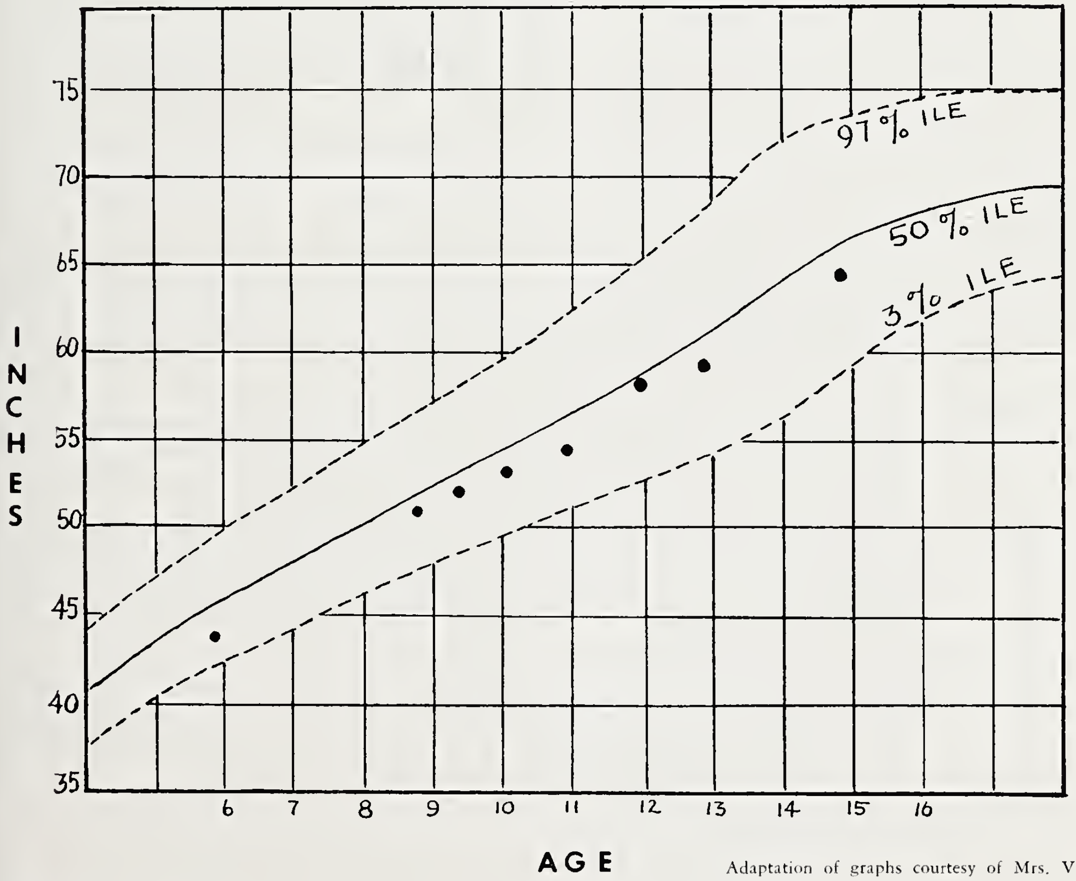


Figure 2

CASE 2

Adaptation of graphs courtesy of Mrs. Virginia Walters.

After examination and evaluation, he and his mother were told that his growth pattern is completely normal for him. His present stage of development shows he is making testosterone, the growth stimulant for adolescent boys. A prescription of extra testosterone would serve only to terminate prematurely his adolescent growth. The nature and usefulness of HGH was discussed and it was pointed out that HGH works only in boys with an actual shortage of growth hormone, not in those who are fulfilling their normal genetic potential for growth.

Case 3

This patient is now 9 years old. Her parents, especially her mother, are tall. Her mother is 70 inches; her father, 71.5 inches. By the parental averaging method her expectancy would be 68 inches. However, from early life she has been consistently above the 97th percentile. (Figure 1, closed circles). Examination of a hand x-ray obtained at age 8 3/12 years was read as compatible with her age. Using Bayley's charts for skeletal age consistant with chronologic age, height expectancy based on her 9-year height of 59 inches is 73 inches. Even if menarche occurs very early and growth therefore stops early, height of at least 70 inches may be expected. If exuberant growth continues as is likely in this child, and especially if menarche has not occurred at age 11 6/12 or 12 years, estrogen therapy, in order to accelerate epiphysical closure, might well be considered. The effectiveness of attempts to frustrate attainment of full growth potential by this type of therapy seems to depend on sufficiently early prescription[9,10] and this child's growth theretherefore should be most carefully followed for the next several years.

REFERENCES

1. Cone, T. C.: Secular Acceleration of Height, in *Adolescent Medicine,* 2nd Ed., ed. by Gallagher, R. Appleton-Century, 1966.
2. Tanner, J. M.: Growth at Adolescence. 2nd Ed. Blackwell Scientific Publications, Oxford, 1962.
3. Reed, R. B. and Stuart, H. C.: Patterns of Growth in Height and Weight from Birth to Eighteen Years of Age. Pediatrics 24:904, 1959.
4. Fried, R. I. and Smith, E. M.: Postmenarcheal Growth Patterns. Pediatrics 61:562, 1962.
5. Gray, H.: Prediction of Adult Stature. Child Develop. 19:167, 1948.
6. Bayley, N. and Pinneau, S. R.: Revised Tables for Predicting Adult Height from Skeletal Age, J. Pediat. 40:423, 1952.
7. Greulich, W. W. and Pyle, S. I.: Radiographic Atlas of Skeletal Development of the Hand and Wrist, 2nd Ed. Stanford University Press, 1959.
8. Wilkins, L.: Diagnosis and Treatment of Endocrine Disorders in Childhood and Adolescence, 3rd Ed., C. Thomas, 1965.
9. Whitelaw, M. J. et l: Estradiol Valerste: Its Effects on Anabolism and Skeletal Age in the Prepubertal Girl. J. Clin. Endoc. and Metab. 23: 1125, 1963.
10. Greenblatt, R. B. et al: Estrogen Therapy in Inhibition of Growth J. Clin. Endoç. and Metab. 26: 1185, 1966.

CLINICAL NOTICES AND MEETINGS

PG Course Hahnemann	Current Postgraduate Education Course sponsored by Department of Medicine, Hahnemann Medical College: April 10-12, 1967, 18th Hahnemann Symposium: *Epithelial-Mesenchymal Interactions.* *General Internal Medicine* will continue each Wednesday, 1-4 P.M., through March 29.
New York University Medical Center	*Immunologic Approaches to Mechanisms of Cutaneous Disease* will be the subject of a Symposium to be held at The New York Medical Center, March 29-31, 1967. For registration information write: Office of the Recorder, New York University Postgraduate Medical School, New York City, N.Y. 10016.
Philadelphia County Medical Society	Annual Postgraduate Institute of the Philadelphia County Medical Society will be held April 11-14, 1967, at the Bellevue-Stratford Hotel, Philadelphia. Registration: $50 for entire period; $15 for individual days. Send inquiries to: 2100 Spring Garden St., Phila., Pa. 19130.
V. A. Hospital (Coatesville)	*Preparing the Long-Term Patient for Return to the Community* is the subject of the tenth Neurophychiatric Institute, co-sponsored by the Chester County Medical Society and the Veterans Administration Hospital, Coatesville, Pa., to be held April 13 & 14, 1967, at the V. A. Hospital.

THE ROLE AND RESPONSIBILITY OF PHYSICIANS IN SEX EDUCATION

• **Physicians have a responsibility to recognize sexuality as a prime motivating force among humans and to be conscious of the need of all adults for the pleasure-giving of sexual intercourse. He must help his patients achieve understanding in these matters so they avoid the traumatizing effects of guilt, shame, and ignorance.**

S. Leon Isreal, M.D.

The present ferment concerning our need as physicians and related professions in the health area, principally the need for sex education, is an example of the age in which we live. We owe the Madison Avenue technique a great deal for this. They have learned, as we have not, that you can sell more automobiles, more shaving cream, more perfume, more after-shave lotion accompanied by a sexual symbol. There is nothing in our lives, no matter in what area we live and work, that does not represent some kind of sexual activity. The reasons are not clear because of some odd voodoo, perhaps instilled at home, at school — and certainly not helped in medical school — that has obscured it. Most physicians are not experts in the subject in which their patients expect them to be "expert." Therefore, the title of this talk is a meaningful one.

The physician's role is that he must learn to be a guide and a counselor in this area as well as others and his responsibility is to recognize that he has this role. This should be put in a context of three separate headings:

1. The physician's recognition that he has such a role to play.

2. His acknowledgement that human sexuality is a tremendous force that cannot be swept under the carpet.

3. Some examples of simple problems that are brought to physicians where the patient *can* be helped.

The first aspect, the recognition by the physician that there is a role for him to play, begins with the acknowledgement of his own sexuality. It may be impossible for a physician to understand the need of his patients for guidance and counseling in this area unless he has come to grips with his own sexual role. He must first understand that sexuality is something you *have*. It is not something you *do*. I have it, you have it, they have it, she has it, he has it, we have it. It is around us all the time. We will not escape from it if we begin, as physicians, to view this force in much the same way factually, that we cope with coronary sclerosis, gastric ulcer, etc. If we place sexual problems in the same context, we will have made a beginning.

The next point in recognizing his role is for the physician to try to identify what sexuality means. The first thing that needs to be said about it is that it is a basic mammalian attribute. There isn't a mammal that doesn't have the endowed ability to make rhythmic pelvic motions, experience genital tumescence and in some, have an orgasm. These are the

---

Dr. Israel is Professor of Gynecology and Obstetrics, School of Medicine, University of Pennsylvania.

Presented at the 15th Annual Meeting of the Delaware Academy of General Practice, Saturday, December 3, 1966 at the Delaware Academy of Medicine, Wilmington.

three mammalian attributes that make up sexuality. As humans, we do something in addition. One reason we are different from lower mammals is because we have a huge brain. We have particularly developed our forebrain and its memory connections to the basic midbrain area during eons of time. This, in a different fashion than in lower mammals, colors the responses we bring to this area — which is learned behavior. This means that our social mores, the community in which we live, the educational process, among other things, affect our responses. What we experience as humans through our learning and behavior patterns tends to obscure the whole problem.

The second great difference between the human and the lower mammal is the fact that we have given up the estrus cycle. We don't have a daily cycle like the fowl, nor the five-day cycle like the rat and the mouse, the fifteen-day cycle like the guinea pig, the semi-annual one of the dog, annual one of the lion nor the 17-year one of the locust. We have no estrus (sexual) cycle. We have given it up. We have managed to corral our reproductive performance in such a way that sexual response does not depend on a reproductive stimulus. It is important that this be mentioned, because, in actual fact, only about one in a thousand acts of sexual intercourse are related to the desire for reproduction. The other nine hundred and ninety-nine are not.

The Estrus Cycle

The absence of estrus is interesting to think about for a moment. Imagine if we still retained it! Imagine for instance if we had the annual estrus of the lion. Imagine for another moment if all women in the world or better yet if all the women in one community had a desire for intercourse only in the month of March! Could you visualize what would happen to the male population in the month of April, which is income-tax month? Just picture the suicide rate in May! We have given up the estrus cycle and in consequence, have taken on additional burdens with the other nine hundred ninety-nine acts because we have failed to recognize that this is a function of being human. We have overlaid this subject with all kinds of ignorance, which inevitably leads to guilt and shame. There is no area in all of human experience which is so encrusted with problems of frustration, guilt and shame. It is this kind of problem at which the physician and his helpers must chip away with tools of understanding.

The Lack of Understanding

One of the ways of attacking this is to try to recognize that some problems associated with sexuality exist only because of a lack of understanding. The physician more than anyone else should be attuned to the fact that one of the great myths in our culture, that of *instant sexual compatibility*, does not factually exist. This alone is the source of a tremendous problem which must be resolved whether it be when giving premarital advice or when counseling a patient who is facing a marital problem. The patient must first be able to understand that there is such a thing as male sexuality that is different from female sexuality. These are not identical. There is no possibility that they will ever be identical, chiefly because of woman's biological role. She can never escape her permanent breast and she can never escape the fact that she has the uterus and the male does not. And despite this fact — in the last one hundred years — she has become equal in many other ways. It is now obvious she is equal in her appreciation of sex. This has come about through her acknowledgement that the mid-Victorian conception of sex is ignorance. Sexuality in the 1850's was not a subject for female discussion or female pleasure. There are two examples of this. Gustave Flaubert, the first great psychosexual novelist, tells the story of a physician in a small town who worked hard, who was very busy, and whose wife, Madame Bovary, was bored and engaged in extra-marital affairs to achieve some sexual satisfaction. Flaubert develops the theme that this caused her degradation and downfall. Her actions were something that society would not accept. The author was tried in court in Paris (of all places)for publishing such a novel. He was given a suspended jail sentence and a warning that this was not a fit subject for a novel in 1854. When James Marion Sims, M.D., 1866, published (in the Medical Times of London) his researches regarding the finding of spermatozoa in the cervix within one and one half to two minutes after ejaculation, he was castigated in editorials up and down the British Isles for tearing asunder (quote), *the sacred veil around the marriage bed.* When you think that a scant 100 years have passed and all of your children, by the time they are nine or ten, know much more than James Marion Sims knew, you appreciate the fact that this is part of our problem. We haven't kept pace by speeding the dissemination of this information and, as a consequence, a great deal of misinformation exists.

The Physician's Role

In selecting examples of areas where the physician can be helpful, let us also select, at random, certain places where he needs information and a comfortable assurance that he knows what he is talking about. If he doesn't have this comfortable assurance, he certainly cannot portray it to his patient. He does happen to be, in almost every community, an easy counselor in one way or another irrespective of his role as a physician, whether he be a general practitioner, or a specialist. In one area or another, sooner or later, he comes in contact with family problems. He becomes privy to family secrets — all of those secrets that our American poet, A. E. Housman, calls, *the problems of our proud and angry dust.* He can't help this, because this is what the community want him to know. One example of what he ought to be able to tell parents is that an eight- or nine-month old baby fondling his penis or her genitals, is exhibiting curiosity. This is the way an infant explores the outside world by touch; this is the way the infant finds out that the fingers are different, and the toes are different than the fingers; this is the way an infant educates himself. The penis is but a geographic surface that presents a challenge. To endow this gesture, which some parents do, with an intent that is not real, is wrong and this is a part of educating parents. Then another tremendous area where parents are puzzled. They ask, "What should I tell Susie when I am pregnant?" Susie is four and a half or five. Susie wants to know why Mommy's tummy is getting bigger and bigger; and she has a right to know that her baby brother is in there and she ought to be allowed to feel the movements of her baby brother. She ought to be told that baby brother is going to come out at a certain time of the year. That is all Susie need to know at this age. She hasn't any curiosity about anything else.

A year later, at six or seven, there follow the next two questions which are much tougher on parents. Physicians ought to be able to help parents prepare the answers to these questions. When we say physicians, we are not excluding other educators. We are conscious of the fact that there are many other members of the community who should also be responsible. The physician is but one of them. He is in a strategic place because these children are brought to him, with an upper respiratory infection, with a skin lesion and these questions come up in this office. He ought be to able to coach the Mother to be comfortable with these answers and cope with the next difficult ones at six or seven. Susie is not satisfied with the enlarging tummy and the fact the baby brother is in there and is going to come out, how is he going to get out? What is harder, how did he get there? It is not easy for everyone to describe the power of distention of the vagina. It is not easy for all parents to talk about the seed that Daddy plants. The physician should be in the forefront by making this easy. This is accomplished by being himself in coping with these questions.

The Adolescent

In the adolescent the obvious problem is that of menstruation. This is a mother's job, but not all mothers can handle this. As a consequence, many schools now do. The physician ought to be able to do this in simple language by explaining the reproductive process and the meaning of menstruation (if the mother wishes this) so that the adolescent girl has the facts straight. The adolescent boy may be guilt-ridden about masturbation. He doesn't know where to turn; he has said one thousand times, "I will not do this again, this disturbs me very much." He knows, possibly, that three days later, four days later, seven days later, he will do it again. This constant repitition of an act, which he doesn't want to do, because he doesn't understand what he is doing, makes him a subject for great empathy. It takes only a five-minute explanation for a physician who is seeing a sixteen-year-old boy because of acne to have some meaningful discussion with him about masturbation. The physician could ask, "Is anything troubling you, George? Is there something that we can talk about?" Very often, George has this right at the top of his head. He ought to be told that this is something he can't help and he may just as well face up to it, he is going to continue doing it. At some point in his life, a little later, he will do it in a different fashion, and will achieve the same satisfaction. Adolescents are accustomed to being told by the adult world, "You are not yet grown up; there are certain things that are reserved for adults." This is one thing the adolescent will not take easily. He needs an explanation as to why there is such a thing as psychosexual maturity.

Emotional Maturity

It is enough to explain that it has to do with the total development of the individual's growth, the acquistion of an adult personality with emotional maturity. This in essence means the ability to make meaningful interpersonal relationships. This is what sexual intercourse really is. We could say this is the highest form of human communication that we have. Why should the adolescent not be told, and helped to understand that you achieve this when you are able to have much pleasure in giving, and not in receiving. An adolescent girl who changes her love object every week, every month, may feel these represent so many "scalps on her belt." These may be necessary to her development. In a way, she is — like the infant touching his penis — learning about the world around her. She needs to know why her reactions are different than a boy's. Boys have a forcefulness and aggressiveness in their sexual responses that are vastly different than hers. The first time she kisses a boy, she is taken by his ardour, and is not prepared for this onslaught. She thought a kiss was a kiss. Eric Johnson talks about this in his book, *Love and Sex in Plain Language* (J. B. Lippincott). He tells girls, "When you start to kiss boys — and I hope you will if you haven't already — just remember that you are not kissing *you*." This rouses them to question "What does he mean?", which is what he really wants them to do. This is an excellent book, recommended for the middle and late teenager.

Pre-Marital Advice

A situation the physician encounters regularly — where he needs to have a comfortable aura about him — is when giving premarital advice. He must recognize the fact that there is more to be discussed than contraceptives. Advice is needed on the anatomic-physical relations of intercourse. He needs also to make them understand that, as a physician, he would like them to think of themselves as embarking on a relationship that is going to make them emotionally dependent upon each other and that their need to understand this is urgent. A woman is a woman, and a man is a man. These two physiologies will clash until the couple learns to modify the approach to each other. It is extremely important that the physician realizes his role and imparts to the couple the impression that this is the heart of marriage. Apart from telling them that the penis will do this and the vagina will do this, and that this is the kind of contraceptive to use, there is much more that, as a physician, he needs to say. Everything that is going to be done in their lives hereafter is related to the partner. Stress again that sexually the man is different. He is ready for intercourse, the bride ought to be told, at the sound of her voice, the rustle of her petticoat and the vision of her slim ankle as it goes along the hall. But this is not enough for her, and they need to understand this, that there is a difference between their responsiveness. They must learn this together. Eleanor Hamilton touches on this in her chapter called Encouraging Sexual Communication, in Klemer's book on martial counseling (William's and Wilkins Co.). Chiefly because she is such a warm person herself, and because she can write a very good English sentence, her chapter is a tremendous one on marriage. She stresses that marriagee is a joint effort; it never stops even during sleep. She reminds the couple that even in the hours of sleep when sleep is not deep and feet touch in the night under the blanket, some meaningful communication goes from foot to foot.

The Pregnant Woman

Another problem is what to tell the pregnant woman about intercourse. If this is a desired pregnancy, she is intent upon the outcome, she knows all about deformities, she worries tremendously and she follows every letter of advice concerning diet, rest, etc., that the physician carefully imparts. Does the physician ever tell her that it is all right to have intercourse? This is something that she lives with day in and day out and so does her husband, and if this is not made specific, her husband seeks extra-marital responses and as a consequence, this becomes the hard core of veneral disease in this country — the extra-marital affair of the husband whose wife is pregnant. We haven't any good reason to tell a woman that she should not have intercourse, unless she is suffering one of the complications of pregnancy, unless she is bleeding, or there is pain of one kind or another. Whether she is being caressed, kissed, fondled or actually has an orgasm, the uterus is contracting just the same and the physician ought to know that physiologically he hasn't any good reason to tell her not to have intercourse. There is a dictum that infection is liable to occur in the latter weeks of pregnancy with intercourse. This has never been researched and is a hold-over from German textbooks of the beginning of the century. I know of no modern investigation of this problem. In dealing largely with indigent patients, it has been found that intercourse does not stop and no greater incidence of infections or ruptured membranes has occurred. The regulation that dictates no intercourse for six weeks after having a baby is standard advice. What is this based on? Is there any reason why intercourse can't occur once the vagina is comfortable and healed? And yet, the standard advice that you hear about is that "you come back in six weeks and we'll talk about it."

Another area concerns the great void that we have allowed to fall upon the older members of our population. There are many more of them now, and all of us know that human sexuality begins in infancy and terminates with the grave. Lewis C. Day has said, "*The anxieties and responses of living, plague us all of our lives. They are ended only when we are in the grave.*" And, this reminds us that the one thing that distinguishes the living from the non-living object, is responsiveness. If I touch this desk, it doesn't move away, but if I touch you, you either move, away from me or toward me, and if you don't do it physically, you do it emotionally, but you respond. And, this is something that old people have too. And, if they have had a good sexual life, in the early years, it continues to be good, and if they've had a bad one, grace will not suddenly descend upon them. They may have problems too, and the one that we have neglected shamelessly, as physicians, is to be very candid with a man's loss of potency — his inability to maintain a suitable erection. We have ignored also, the woman's atrophic vaginal mucosa, unless she mentions it. Why should this go unrecognized? If you looked in her mouth and you saw a gingival ulcer, you would advise her that she needs treatment on this. If you look in the vagina and you see tell-tale bruises of traumatic intercourse, knowing, that this must have been terribly painful, why should you wait for her to ask you a question? Should you not as a physician broach the subject first?

The physician must realize the relationship to sexual education is his final responsibility, the acknowledgement that pregnancy out of wedlock, venereal disease, contraceptive problems are all problems that belong to him — but not to him alone. There are other agencies that he as a physician should not only be aware of but be willing to cooperate with . . . the church, the school, social organizations and many others.

Franz Kafka in his novel, "The Country Doctor," has his protagonist (the country doctor say to his son, "To write a prescription is easy, to understand people is difficult."

LABORATORY FINDINGS IN HEPATIC CIRRHOSIS

● **Four hundred and fifty cases of Laennec's cirrhosis, observed over an eight year period, are presented. The cases have been classified into several groups that roughly correlate with the of the disease. The results of liver function tests in each group are noted and the incidence of abnormalities compared.**

Ralph M. Myerson, M.D.

There is, of course, no single laboratory test or any combination of laboratory tests that can be considered confirmatory of the diagnosis of cirrhosis of the liver. The diagnosis rests largely on the clinical findings and, when possible, on histologic examination of the liver. Laboratory tests of liver function can serve only as an adjunct to the diagnosis.

It must be emphasized that the disease, cirrhosis of the liver, comprises a wide spectrum of clinical and histologic abnormalities, and, therefore, liver function tests will vary greatly, depending usually on the stage and manifestations of the disease. Generally, there is fairly good correlation between aberrations in the laboratory tests of liver function and the clinical severity of the disease. Occasionally, however, an advanced case of cirrhosis will have essentially normal studies, and conversely, a clinically early case will manifest severe distortion of liver function tests. We have found a much better correlation between the clinical findings and the laboratory tests than we have between the histologic findings and the liver function tests.

A personal factor is another important variable in the assessment of liver function tests. On the basis of experience, laboratory facilities, and expense to patients, most clinicians have developed a preference for certain tests and give priority to these. For example, galactase tolerance, hippuric acid excretion and determination of cholesterol esterification are only rarely performed in our laboratory.

In the eight years, 1958-1965, 450 cases of Laennec's cirrhosis of the liver were admitted to the Philadelphia Veterans Administration Hospital. All were chronic alcoholic men whose ages ranged from 24 to 78 years. The diagnosis was made on the basis of the history, clinical findings and laboratory studies. In 315, or 70%, the diagnosis was confirmed by histologic examination of the liver,

TABLE I

CLASSIFICATION OF 450 CASES OF LAENNEC'S CIRRHOSIS

	No. Cases	*Percent*
A. Uncomplicated (compensated, inactive)	104	24%
B. Complicated (decompensated, active)	245	54%
1. Ascites (77)		
2. Jaundice (Bilirubin) >3.0) (41)		
3. Ascites+Jaundice (127)		
C. Hepatic Coma	101	22%
1. Exogenous (70)		
2. Endogenous (31)		

Dr. Myerson is Assistant Chief, Medical Service, Veterans Administration Hospital, Philadelphia, Pa.; Clinical Professor of Medicine, Woman's Medical College of Pennsylvania.

TABLE II

LIVER FUNCTION TESTS IN 104 CASES OF COMPENSATED CIRRHOSIS

Laboratory Test	*Number Performed*	*Percent Abnormal*
Bromsulphalein Retention	92	86%
Hyperglobulinemia	74	56%
Hypoalbuminemia	74	44%
Abnormal Cephalin Flocculation	38	43%
Abnormal Thymol Turbidity	34	30%
Increased SGOT	58	29%
Hypoprothrombinopenia	80	21%
Increased Alkaline Phosphatase	77	19%

obtained either by percutaneous needle biopsy or at the time of autopsy.

Clinically the cases were divided into several groups, as shown in Table I. From a clinical standpoint, we have found this grouping to be relatively satisfactory from the standpoint of grading severity and prognosis.

Compensated cirrhotics are those who have certain clinical stigmata of the disease, such as hepatomegaly, liver palms and spider telangiectasia. They are, however, usually asymptomatic or have relatively mild complaints. The patient is usually admitted for another reason either related or unrelated to his alcoholism.

Table II lists the results of liver function tests in this group of patients. The bromsulphalein test is by far the most reliable test at this stage of the disease, being abnormal in 86% of our cases. The other tests have a much lower incidence of abnormality. In addition, some of them are nonspecific aberrations occurring in other than liver disorders. The alkaline phosphatase is usually normal or only slightly increased. Distinct elevations of the alkaline phosphatase in the absence of bony disease alert us to the possibility of a primary or secondary hepatic neoplasm.

TABLE III

LIVER FUNCTION TESTS IN 77 CASES OF CIRRHOSIS WITH ASCITES

Liver Function Test	*Number Performed*	*Percent Abnormal*
Bromsulphalein Retention	76	97%
Hyperglobulinemia	75	92%
Hypoalbuminemia	75	89%
Increased SGOT (42)	53	79%
40-100 U (30		
100-200 U (10)		
> 200 U (2)		
Hypoprothrombinopenia	69	63%
Abnormal Cephalin Flocculation	22	59%
Abnormal Thymol Turbidity	18	33%
Elevated Alkaline Phosphatase	66	20%

TABLE IV

LIVER FUNCTION TESTS IN 41 CASES OF LAENNEC'S CIRRHOSIS AND JAUNDICE ALONE

Liver Function Test	*Number Performed*	*Percent Abnormal*
Increased SGOT	34	91%
40-100 U (11)		
100-200 U (17)		
> 200 U (4)		
Hypoprothrombinopenia	40	88%
Abnormal Cephalin Flocculation	21	71%
Hyperglobulinemia	36	70%
Abnormal Thymol Turbidity	28	46%
Hypoalbuminemia	36	44%
Elevated Alkaline Phosphatase	39	41%

Abnormality of Liver Function

There is a general rise in the percent abnormality of liver function tests in the patient who has ascites. Again, the bromsulphalein

TABLE V

LIVER FUNCTION TESTS IN 127 CASES OF LAENNEC'S CIRRHOSIS WITH ASCITES AND JAUNDICE

Liver Function Test	*Number Performed*	*Percent Abnormal*
Hyperglobulinemia	118	92%
Hypoprothrombinopenia	119	91%
Increased SGOT	86	89%
40-100 U (41)		
100-200 U (30)		
> 200 U (6)		
Abnormal Cephalin Flocculation	62	64%
Hypoalbuminemia	118	58%
Abnormal Thymol Turbidity	44	48%
Elevated Alkaline Phosphatase	114	45%

retention has the highest rate of abnormality, but the incidence of abnormalities in other studies is not much different (Table III). Hyperglobulinemia is usually not striking and the change usually consists of a generalized elevation of gamma globulin. Hypoalbuminemia is usually relatively mild, with most values falling in the range of 2.3 to 2.7 grams per 100 ml. Compared to the compensated cirrhotics, there is a much higher incidence of hypoprothrombinopenia (63% compared to 21%). Transaminase elevations are also more common (79% compared to 29%), although most elevations are slight in the 40 U to 100 U range.

With the development of jaundice, the incidence of transaminase abnormalities increases and the elevations tend to be more striking (Tables IV and V). The incidence of hypoprothrombinopenia also becomes very high. These changes undoubtedly reflect the hepatocellular degeneration that is present in jaundiced cirrhotic patients. The presence of a hepatocellular component, even of an inflammatory nature, is suggested by the increase in percentage abnormality of the flocculation tests, especially the thymol turbidity.

Table VI summarizes the changes in the liver function tests in the various stages of cirrhosis of the liver. Retention of bromsulphalein remains the most sensitive test in the anicteric patient and is specific for liver disease, although not necessarily for cirrhosis. Quantitative changes in serum proteins occur as the disease progresses, especially in the presence of ascites. Tests that are indicative of hepatocellular disease, such as the transaminase, prothrombin time, and flocculation tests are more prominent in cirrhotics who are jaundiced. The alkaline phosphatase is of value in that it is normal or only slightly elevated in cirrhosis. Values tend to increase as jaundice develops, probably as the result of intrahepatic obstruction.

It should be emphasized that most of the tests are not specific for liver disease and there is no pathognomonic pattern for cirrhosis of the liver.

TABLE VI

ABNORMALITIES OF LIVER FUNCTION IN VARIOUS STAGES OF CIRRHOSIS

	Percent Abnormality			
Liver Function Test	*Compensated*	*Ascites*	*Jaundice*	*A+J*
Bromsulphalein Retention	86	97	—	—
Hyperglobulinemia	56	92	70	92
Hypoalbuminemia	44	89	44	58
Abnormal Cephalin Flocculation	43	59	71	64
Abnormal Thymol Turbidity	30	33	46	48
Increased SGOT	29	79	91	89
Hypoprothrombinopenia	21	88	88	91
Elevated Alkaline Phosphatase	19	20	41	45

President's Page

FERMENT IN MEDICINE

The above caption is the title of a book by Dr. Richard M. Magraw. To use this page as a commentary on a recent publication is an innovation. Since this Journal does not carry a book review section, I feel justified in using this space in such a manner. That the political, social and economic order is in ferment is without question. It is not unusual that medicine, being an implicit element in today's world, would find itself in ferment. Dr. Magraw has written a book that is worthy of readers of this Journal's attention.

Following the death of the late and revered, Dr. Norman A. Welch, then President of the American Medical Association and Past Chairman of the Board of the National Association of Blue Shield Plans, the NABSP, as a memorial to Dr. Welch, provided a monetary grant and a gold medalion for the most scholarly and timely publication paper or writing on economic and social aspects of medicine. It has been my privilege to serve as one of the three judges in evaluating a vast amount of material submitted during the past two years.

This year, the work of Dr. Richard M. Magraw was selected. In this book, Dr. Magraw has written carefully and entertainingly in an analytical fashion, the nature and purpose of medical practice. He further describes and discusses some of the major forces now acting to modify traditional patterns of medical care and practice. With an unusual personal background, rooted in medical practice, psychiatry and teaching and with a talent, not only for asking thought provoking questions but also for clarification of the confusing, Dr. Magraw has written an important book. He presents a comprehensive, realistic appraisal of the major forces causing the upheaval in the existing concepts, practices, and institutions in medicine; and makes an impressive analysis of those elements essential to the optimal medical care and maintenance of health for all persons.

Medicine, he emphasizes, is a social science and the role that the doctor will play is defined by society. It cannot be separated from the life of the nation, and therefore the society which does not understand the professional responsibility of the physician can by government fiat, control and actually dictate the direction of the medical profession. This dictation can be averted by communication, by explaining and informing the citizenry of the real elements of medical care. Ultimata or coercion through threats of a strike will not achieve the goal the profession is seeking.

The economic and legal aspects of medical care, the accelerating rate of hospitalization, health insurance, the roles of union and industry, modes of payment of doctors — all these and many more perplexing problems are examined with thoroughness and impartiality. The writer elaborates on other aspects: doctor-patient and hospital relationships; medical specialization; professional obsolescence; government and medicine; expanding medical knowledge; and the growing family of medical professions.

Dr. Magraw has written a scholarly, persuasive, and informative work and every physician who reads it will find it helpful in analyzing the complicated, changing world in which he practices his profession.

H. Thomas McGuire

In Brief

Speakers on "Doctor's House Call"

Speakers for March, 1967, on the Tuesday radio program, (11:05 a.m., WDEL) Produced by the Medical Society of Delaware are: March 7: Lidia Bales, M.D., title to be announced; March 14: Elmer R. Gross, M.D., *Acne*; March 21: Kenneth M. Corrin, Jr., M.D., *Heart Disease;* March 28: Douglas W. MacKelcan, M.D., *Back Pain.*

Radio Seminar Curriculum

The Radio Seminars conducted by the Pennsylvania Hospital are held at the Wilmington Medical Center, Memorial Division, every Tuesday at 12:00 noon with luncheon served. The course is approved for 24 credit hours by AAGP. Sydney Stat, M.D., is moderator. Current program:
Mar. 7, 9: *Treatment of Tuberculosis*, Peter A. Theodos, M.D., Associate Professor of Clinical Medicine, Jefferson Medical College.
Mar. 14, 16: *Emphysema*, Howard N. Baier, M.D., Associate Professor of Medicine, Temple University School of Medicine.
March 21, 23: *Genetic Abnormalities: Suspicion and Diagnosis*, Angelo M. DiGeorge, M.D., Associate Professor of Pediatrics, Temple University School of Medicine.

Special Calendar Date

The Medical Society of Delaware will sponsor a meeting on *Morality in Ethics in the Practice of Medicine*, March 4, 1967, at the Delaware Academy of Medicine, Wilmington. It will be supported by a grant from Lederle Laboratories. Formal programs have been sent to members of the Society and to a number of physicians outside the State. No fee is required for attendance at the scientific session or the luncheon. The program is acceptable for 4 hours of continuation study credit by AAGP.

Charges by Hospital-Based

The Social Security Administration has engaged the Columbia University School of Public Health and Administrative Medicine to review the status of the two largest hospital-based physician groups—radiologists and pathologists—prior to the beginning of the Medicare program, July 1 and following that date. Prior to Medicare, their charges were usually combined with other hospital expenses in billing the patient. Under Medicare, separate charges are necessary, since physician services are paid for under one part of the program and hospital expenses under the other. Robert M. Ball, Commissioner, has noted that the Medicare billing procedure has led to changes in some institutions, particularly where hospital-based physicians seek to become independent of the institution. He stressed that the Social Security Administration will play no part in the negotiations between the hospitals and the doctors who want to change their arrangements. The study should provide information needed to evaluate Medicare policies and to serve as a basis for administrative and legislative planning in this field.

Physicians Glaucoma Testing

Doctors are urged to make glaucoma testing part of regular physical examinations. Tonometric examinations for glaucoma are performed almost routinely by ophthalmologists and occasionally are carried out by internists and general practioners. Every doctor's office and every hospital inpatient department should become a glaucoma detection center. Physicians who have not used the tonometer or who feel the need for more experience in its use, should arrange to spend some time at a glaucoma clinic either at a hospital where tonometry is performed or at one of the glaucoma detection centers. (*New York State Journal of Medicine*)

New Product Survey of Drugs

The number of prescription drug products introduced last year dropped to 80 from 112 in the year before. Fewer new medicines were introduced in the USA in 1966 than in any of the previous 18 years for which accurate records are available, according to *Drug Information Services, Paul de Haen, Inc.* The survey shows that in 1957 there was a total of 400 new products which declined slowly to 80 for 1966. Sharpest decline in new drug products was in the number of single new chemical agents. The figure reached a new low of 12 after a high 63 in 1959. This number of single chemical agents introduced in the USA last year was lower than in those marketed in the four major European countries—34 in France, 42 in Germany, 20 in Great Britain and 21 in Italy. One third of these drugs were developed by American scientists. During 1966, the American drug industry marketed 7 new chemical agents, in those countries, that were not available to physicians in the United States during the year. Two of the seven, however, were approved for marketing in this country in January, 1967. These seven new drug products are: a highly potent diuretic, an antituberculosis agent, two tranquilizers, an antidepressant, an antiarthritic and a drug for anemia. These trends have important implications for the Amercan public: (1) the decline in introduction of major new prescription drugs in the United States; (2) the increased time required by the FDA to act on approval of new drugs; (3) the increasing number of new drugs being marketed overseas before they are available to physicians in this country; (4) the decline in the number of American companies that are introducing new medicines.

The Month in Washington

The President has called for extension of existing legislation to improve state and local health planning and to launch special pilot projects to bring medical and rehabilitation services to the aged. Johnson added that a state should not be permitted to have its income ceilings for medical assistance (Title XIX) more than 50 per cent higher than the level set for welfare assistance. The medicaid program, which now gives states carte blanche as to income standards, became the subject of widespread controversy after New York set an eligibility standard of $6,000 net income for a family of four.

The Army and Navy will draft 2,118 medical doctors and 111 osteopaths starting in July. Selective Service was requested to provide the doctors because an insufficient number had volunteered to be able to replace men leaving service after two years' active duty. The Air Force will not participate in the summer draft call, it is meeting its needs.

Health program highlights of the HEW budget include: A 5 per cent increase, to $1.45 billion, for medical research. A $4 million increase for FDA will be used to: (1) expedite the review and surveillance of new drugs for safety and efficacy, (2) expand extramural research into the side effects of oral contraceptives, (3) expand the program established under last year's Drug Abuse Control Amendments, and (4) carry out the new Fair Packaging and Labelling Act. The 1968 budget will also emphasize regulation of barbiturates, amphetamines, and similar drugs.

Auxiliary Affairs

Mrs. Christos Papastavros

AUTOBIOGRAPHICAL SKETCH OF OUR NEW CASTLE COUNTY PRESIDENT —

My family moved from Pennsylvania to Delaware when I was quite young so I consider myself a native Delawarean. I was the fourth of five children and we grew up in what was then, the rural community of Claymont. We lived next to a farm and spent many, many carefree days enjoying all the adventures a farm has to offer. We enjoyed a freedom to wander and investigate. This is a difficult thing to give our own children when there just aren't the large land areas close to town today that existed then.

I attended Claymont School until the seventh grade at which time I entered Friends School in Wilmington. During these years I was an avid participant in sports, particularly field hockey, basketball, and softball. After graduation in 1949, further schooling included a medical secretarial course at Penn Hall Junior College in Chambersburg, Pennsylvania, and one year of additional science courses at the University of Delaware with an eye toward training as a Physical Therapist.

For several summers I worked as an Aide at the Alfred I. duPont Institute and then took a summer job in the X-Ray Department of the Delaware Hospital as a medical secretary. It was here I compiled a spelling list of often dictated, but difficult words to which I added the name Papastavros. Dr. Papastavros, the resident, often dictated reports and I was continually bothering my colleagues for the correct spelling of his name — hence, the addition to my spelling list and to my own name. We were married in August, 1953 and now have three children — Steven 12, Christina 8, and David 6.

One of the more interesting aspects of our life has been our frequent trips to Greece to visit Chris's family who are all in Athens. I have absolutely fallen in love with Athens and the Greek people and have become fascinated with Greek culture and history. Having a great love for swimming and the sea, the Aegean is an absolute joy to us.

Our other interests include music with frequent trips to the Philadelphia Orchestra and the Metropolitan Opera but of course our home and children are our primary center of activity.

I have enjoyed working in the Auxiliary for ten years and of course am honored by my position as President this year. I am particularly interested in the medically oriented Community and World Service aspects of the Auxiliary and see in it our greatest area for growth in the future.

Elizabeth B. Papastavros

Delaware Medical Journal

MARCH, 1967

VOLUME 39

NUMBER 3

NEUROLOGICAL MANIFESTATIONS OF ANTIPYRINE POISONING

• Though antipyrine is known to be extremely toxic, it is still available in topical and oral form. The dermatologic picture is that of the fixed eruption of Brocq, but the systemic picture is markedly complex.. Neurological signs indicate that the cerebral hemispheres, cerebellum, and brainstem are involved.

Dewey A. Nelson, M.D.
Richard G. Berry, M.D.

Antipyrine was first synthesized in 1883 by Knorr who was attempting to synthesize a quinine substitute.[1] Quinine was then being used as an antipyretic and there was an active search for similar compounds which might more efficiently control fever. Since antipyrine is freely soluble in water, alcohol, chloroform and ether, it can be used orally or parenterally. It is absorbed through the skin or mucous membranes, and has a local anesthetic as well as an analgesic action. The fate and excretion of 60% of an injected dose remains unknown.

Between 1883 and the present, about 400 cases of antipyrine poisoning have been reported in the world literature. Most of these cases involve dermatologic symptoms. There have been about 20 fatalities, and a bewildering number of systemic symptoms and laboratory findings have been reported in this group.[2] Most of the case reports are sketchy. Because of this, no clear neurological picture of this type of poisoning has been published. The present report of 3 patients will emphasize that the dermatologic picture is more specific than the neurological picture. Only by realizing this and by being familiar with the various sources of antipyrine will one be able to make an early diagnosis and begin treatment with steroids, which seem to be effective in treating these patients.[3]

The dermatologic picture is well known and usually is quickly recognized by dermatologists. Patients first react to the compound with pruritis of the mouth, throat or genitalia. Large erythematous and bulbous eruptions next appear over portions of the body (Fig. 1). As these heal they become pigmented (Fig. 2) With the next exposure to the drug, the erythema and bullae reappear at the pigmented sites. This is the characteristic fixed eruption of Brocq, first described in 1894.[4]

Antipyrine was available for many years as a proprietary cold medication called "666" cold preparation, manufactured by the Monticello Drug Co. of Jacksonville, Florida.[5] It

---

Dr. Nelson is Section Head, Neurology, Senior Attending, Department of Medicine, Wilmington Medical Center.

Dr. Berry is Professor, Neuropathology, Jefferson Medical College, Philadelphia, Pa.

contained 20 mg. of antipyrine per cc along with some ammonium chloride, magnesium sulfate and citric acid. Because of increasing reports of toxicity, the formula was changed in 1959 substituting sodium salicylate for the antipyrine. This compound is referred to as "Triple Sixes" by its users, predominantly those in lower socio-economic groups. The three patients to be reported had ingested "666" in 1959 prior to the formula change.

There have been five papers describing poisoning by "666". Of the 31 patients described, 30 were Negro.[3,6,7,8,9] There was one fatality in this group, a 37 year old Negro female who consumed half a glass of "666", containing 2.5 gm. antipyrine, for a cold. Shortly thereafter large vesicles and bullae appeared over her body surface. Death occurred on the 8th hospital day following a febrile course. Several instances of poisoning have been reported in Caucasians. Steroids have been reported to be effective in preventing the rash when administered prior to the ingestion of antipyrine in a sensitized patient.[3]

When the formula of "666" was changed a popular source of antipyrine disappeared but there are still about 20 medicines which contain it on the American market[10,11,12] (Table 1). The topical preparations are probably far less capable of producing poisoning than the others. It is well known, however, that toxicity is a matter of sensitivity, and the total dose can be small while producing serious symptoms.

The Food and Drug Administration is discouraging the use of antipyrine. Labels must declare the amount of antipyrine in compounds and must state that skin rashes may occur.[13] The compound is therefore slowly disappearing from the American market.

Three patients were seen in the Delaware Hospital, Wilmington, Delaware in 1959 with symptoms of antipyrine poisoning. All had ingested alcohol along with the antipyrine. The recognition of the typical skin rash in one patient actually led to the diagnosis in two others who had systemic and neurological symptoms. One patient expired, and an autopsy was performed. Since to our knowledge, there are no neuropathological discriptions available concerning this poisoning in man, findngs in the brain will be discussed.

Case No. 1

A 47 year old Negro stevedore was admitted to the Delaware Hospital on April 13, 1959 and discharged on April 25, 1959. He gave a history of drinking large quantities of whiskey several months before admission. A sore throat, painful tongue and general malaise made him stop his drinking 24 hours prior to admission. A grand mal convulsion precipitated his admission.

He was poorly oriented but cooperative. He was a muscular man with patches of more darkly pigmented skin here and there, the result of a rash 2 years before. His vital signs were T 99°, B.P. 176/92, P 118, R 28. His neurological examination was unremarkable.

CBC was normal, VDRL non-reactive, urine contained 1 plus albumen. Spinal fluid revealed one lymphocyte per cu mm, with a protein of 74 mg %. Skull x-rays were normal. A methyl alcohol blood level was 0., blood sugar 121 mg%, and BUN 10 mg%. An electroencephalogram several days after admission showed no abnormalities.

During the first day the skin erupted into a vesiculobullous dermatitis. The dermatological consultant diagnosed this as a fixed drug eruption of Brocq due to drinking "666" cold preparation. The patient mentioned that his "drinking partner" who also had been drinking "666" for a cold was in a nearby bed. The latter patient who was in a moribund state will be described as Patient No. 2.

The dermatologist considered the skin rash a threat to the patient's life and on his advice Aristocort 8 mg every 6 hr. by mouth was given. The rash quickly began to fade, and after the 6th day the dosage of cortisone was gradually reduced. The patient was discharged well on the 13th hospital day.

Case No. 2

This 55 year old Negro man was admitted to the Delaware Hospital on April 4, 1959, because he was found in a semicomatose condition in his room. Ten days before admission he complained of an upper respiratory infection and retired to his room where he consumed large quantities of whiskey along with "666" cold preparation. It was found that he had been exposed to antipyrine only after the history was obtained from Patient No. 1.

The patient was incoherent and complained of abdominal pain. Vital signs on admission were: T 99.6, B. P. 110/80, P 126, R 28. His speech was slurred. There was a left lower facial weakness and his tongue protruded to the left. The deep tendon reflexes were hypoactive. Admission laboratory studies revealed Hgb. 13, WBC 20,300. Urine showed 4 plus sugar and a trace of acetone. Plasma acetone was positive in 1:2 dilution. Blood sugar was 508 mg%, BUN 44 mg%, Plasma CO_2 combining power was 4 meq/L. The SGO transaminase was 2000 U, SGP transmaminase was 892 U. Spinal tap showed a pressure of 150 mm H_2O, 16 lymphocytes per cu mm, and a protein of 53 mg%. EKG showed evidence of left ventricular hypertrophy, first degree heart block and frequent ventricular premature contractions.

The patient had a grand mal seizure shortly after admission and the blood pressure became unobtainable. Levophed was used over the first 18 hours in order to maintain his blood pressure. He then became more alert and Levophed was discontinued. His blood pressure gradually fell from 190/120 to 110/60 on the 11th hospital day (day of death). His temperature slowly rose from 101° to 105° F. On the 8th hospital day he would occasionally assume a decerebrate posture, though he could swallow on command and had some periods of coherent speech. On the 10th hospital day he developed a tremor of the tongue and nystagmus in all directions. He had marked ataxia of his arms which he could occasionally move on command. His body was alternately rigid in opisthotonos or hypotonic. He died on the 11th hospital day after four grand mal seizures.

Significant laboratory results are summarized in Table 2. There was a progressive fall in his hemoglobin. Nucleated red blood cells appeared in the blood, probably due to hemolysis. His BUN slowly climbed from 44 mg% to 171 mg%, and the urine contained progressively more albumen and red cells. The blood glucose remained between 400 mg% and 500 mg%. No more than a trace of urine or plasma acetone was present. The blood sugar levels were not appreciably affected by daily insulin doses from 10 to 230 units. Staphylococcus aureus coagulase positive was

TABLE I

TRADE NAMES OF COMPOUNDS CONTAINING ANTIPYRINE

NAME	USE	DRUG COMPANY
Sominat	Sleep	National Drug
Analgesine Liq.	Analgesic	Elder
Bramoso Sol.	Analgesic	Tilden-Yates Labs.
Felsol Tabs. & Pow.	(Analgesic, Antiasthmatic)	American Felsol
Phenylin Caps.	Antiasthmatic	Mallard
Auralcaine	Ear Drops	Brooke Labs.
Auralgan	Ear Drops	Ayerst
E-R-O	Ear Drops	1st Texas Pharm. Inc.
Otocaine	Ear Drops	Professional
Otocort	Ear Drops	Lemmon
Otrathol	Ear Drops	Messengill
Ray-Auretone	Ear Drops	Raymer
Sulf-Auretone	Ear Drops	Raymer
Tympagesic	Ear Drops	Warren Teed
Tyotocin	Ear Drops	Merck
Rhinalgin	Nose Drops	Ayerst
Lanylgan	Throat Spray	Ayerst
Collyrium	Eye Drops	Wyeth
Pre-Frin-A	Eye Drops	Allergan
L-EpiFrin	Eye Drops	Allergan

TABLE 2

LABORATORY RESULTS ON PATIENTS NO. 2 and NO. 3

	Hosp. Day	Hgb gm %	BUN mg %	Glucose mg %	Plasma Acetone	CO_2 Meq/L	Methyl OL
PATIENT # 2	1	13	44	508	Tr	4	
	4	6	51	584	1	13	
	8	7	77	395	0	13	
	11	7	171	466		10	neg
PATIENT # 3	1	17	14	114			
	4	16	21			25	neg
	15	15					

grown from his bloodstream on the 8th, 9th and 10th hospital days. A methyl alcohol level was negative on the eleventh hospital day.

Autopsy Results

The lungs were markedly edematous. The liver was flabby and yellow. The kidneys were pale with congestion of the medulla. Microscopic sections revealed severe necrosis of the proximal convoluted tubules with a swelling and vascular thickening of the glomeruli. There was a splenic infarct, secondarily infected coincident with the terminal septicemia. Fatty and necrotic changes were present in the liver.

The brain weighed 1325 grams. Surface atrophy and congested meninges were described. Softening was noted in the superior surface of the left occipital lobe. Cortical sections showed marked fibrous thickening of the leptomeninges. Neurons were severely damaged, many shrunken and pyknotic, others showing the homogenizing eosinophilic changes of Spielmeyer. Accompanying these acute neuronal changes there was moderate microglial proliferation with prominent, congested capillaries, and occasional petechiae in the cortex and white matter. A solitary micro-abscess was present in the white matter in the frontal lobe. Changes of a more chronic nature were present in the form of diffuse proliferation of astrocytes of the Alzheimer type II variety (Figure 3).

Sections of mesencephalon, pons and medulla showed similar diffuse astroglial proliferation. There was extracellular pigment in the substantia nigra. The blood vessels showed only a mild adventitial thickening. There was acute necrosis of the granular layer of the cerebellum, and eosinophilic homogenizing changes of the Purkinje cells with mild proliferation of Bergmann's glia.

Case No. 3

A 40 year old Negro man was admitted to the Delaware Hospital on July 20, 1959, because of somnolence and disorientation. He gave a history of an upper respiratory infection seven days before admission. He admitted drinking a pint of whiskey daily over the last few months, but denied any other exposure to drugs until the ingestion of "666" cold preparation was specifically inquired into. His wife admitted to his drinking an unknown quantity, and a half consumed bottle was found in his medicine cabinet at home.

Admission physical examination revealed normal vital signs. He was disoriented. All

TABLE 3

COMPARATIVE LABORATORY RESULTS

PATIENT	SPINAL FLUID		BUN	GLUCOSE	Hgb	URINE	EKG Changes
	CELLS	PROTEIN mg %	mg %	mg %	gm %		
#1 Rash	1 lymph	74	10	121	15	Neg	0
#2	16 lymph	53	171	584	13→7	RBC ALB	+
#3	2 lymph	64	21	114	17→14	RBC ALB	+

muscle groups were painful to palpation. There was an erythematous skin rash. Cranial nerves were intact and reflexes were hypoactive. While he was being examined he had a grand mal seizure.

CBC was normal except for 18,000 WBC, urine contained a trace of albumen, VDRL was non-reactive, BUN was 14 mg%. Blood sugar was 114 mg%. Spinal tap showed 2 lymphocytes per cu/mm, protein was 64 mg%. EKG showed sinus tachycardia with high peaked "p" waves and biphasic "T" waves in V-5 and V-6.

During the first 24 hours the patient was intermittently decerebrate though he could occasionally converse. He became more disoriented and developed hallucinations during the first three days. His temperature began to climb, and chest x-rays revealed an area of pneumonitis at the left base.

He was given 150 mg. hydrocortisone intravenously and Prednisone, 10 mgs. every 6 hours by mouth. Within 24 hours he was restless, and by the 5th day of treatment he was completely oriented. His BUN did rise slightly to 21 prior to treatment (Table 2) but he did not show the extensive electrolyte changes of the patient who expired.

Discussion

It is fortunate that this type of skin rash is often easy to identify since it is an aid in the diagnosis. The typical skin rash which occurred in patient No. 1 led to the diagnosis in patient No. 2 since it suggested they had ingested some common substance.

Two patients had delirium which alternated with periods of being coherent. They both had grand mal seizures and decerebrate posturing. One patient could converse while apparently decerebrate. There were cerebellar and brainstem signs consisting of intention tremor, nystagmus and deviation of the tongue. The cerebral hemispheres, brainstem and cerebellum are therefore all involved in a variable manner. The part that alcohol ingestion played in producing these signs cannot be stated with certainty. The decerebrate posturing along with numerous changes in vital signs, and involvement of multiple systems suggested that alcohol alone could not explain the clinical picture.

Antipyrine has long been known to produce changes in many organs. All three patients had elevated BUN. The patient who expired had evidence of hemolysis and was severely acidotic (but not ketotic). In this patient, the extremely high blood sugar which did not fall in spite of high doses of insulin made us suggest some other cause other than diabetes.

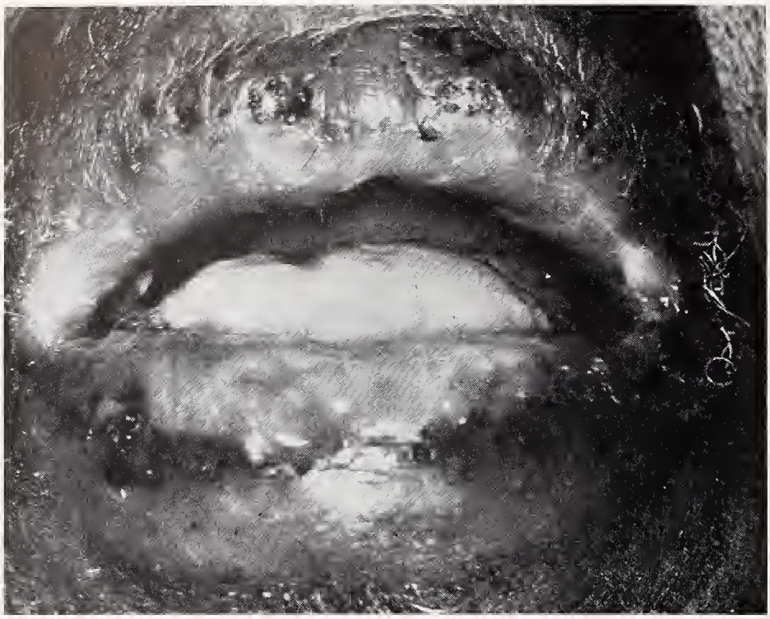


Figure 1

The acute bullous eruption around the mouth is shown. This can be generalized, but the face, hands, feet and genitalia show a predisposition.*

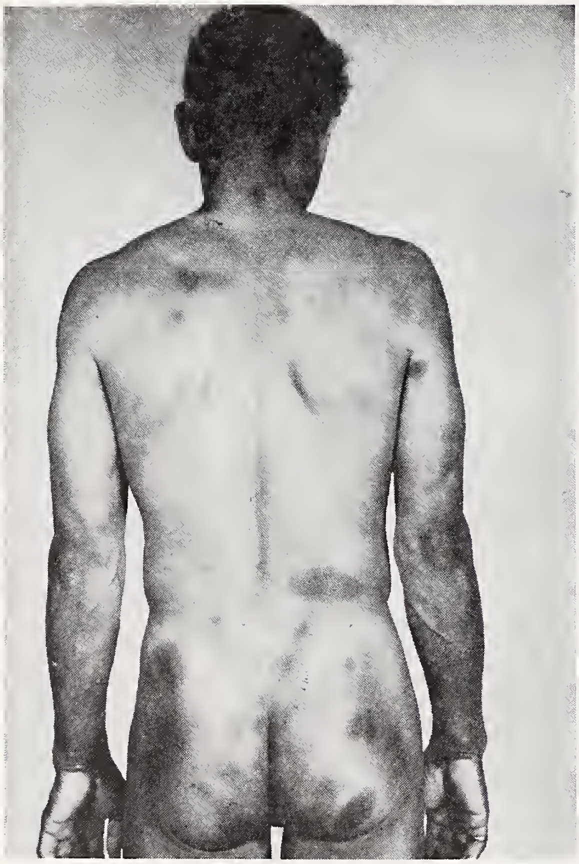


Figure 2
The chronic pigmented skin rash (of Brocq) is shown. With re-exposure to antipyrene, these are reconverted into the acute bullous phase.*

Amongst the fatal cases in the literature descriptions of pathological findings are sparse.[2] One patient showed congested brain and meninges, with dilatation of the superficial veins and few hemorrhages. There were also congestion of the lungs, enlarged spleen and renal infarcts. This patient's underlying disease was puerperal fever. In two other patients with typhus, there were no changes in the brain in one, and in the second, brain edema was described. A fourth case had a brain tumor. In two other cases in the literature the brain was not examined, but one showed renal hemorrhage and the other showed fatty and granular changes in the liver and kidneys. In the most recent case, described by Kennedy[9], the brain was not mentioned but there were fatty liver changes. Pandi[14] described profuse swelling of the neurons and hypertrophy of the axons in experimental antipyrine poisoning in the rabbit. Others have described primary degeneration of the cortico-spinal tract and the posterior column.

Although the history and findings in the autopsied case in the present series were compatible with an intoxication, the brain lesions were non-specific. The thickened pia-arachnoid, the mild degenerative changes of the

---

*Copied from the files of Dr. C. Barrett Kennedy. 10

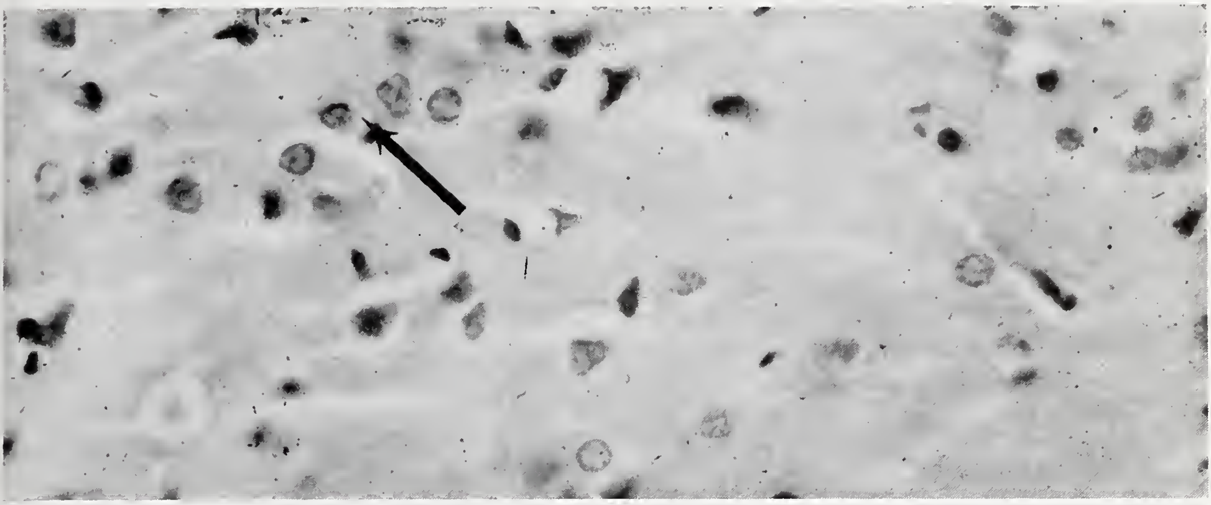


Figure 3. Four astrocytes of the Alzheimer type II variety are seen at the tip of the arrow. H & E x300

leptomeningeal vessels, and the diffuse proliferation of astrocytic nuclei of the Alzheimer type II variety in the gray matter were considered to be older than the terminal illness. The astrocytic reaction was akin to that seen in chronic liver disease or in senile and presenile brain disease.

The more acute changes throughout the gray matter interpreted as evidence of hypoxic damage. The septicemia, renal and liver damage, hypotension, and evidence of chronic cardia disease were all factors complicating the histopathology. It is probable that these changes resulted from a combination of chronic alcohol ingestion and acute antipyrine ingestion.

Summary

Most of the clinical reports of antipyrine poisoning have described the skin hypersensitivity which is the fixed eruption of Brocq. One patient described here showed the typical skin rash but the other two developed many systemic and neurological signs, with electrolyte changes. Acidosis and insulin-resistant hyperglycemia without ketosis were present in one patient who expired. The kidney showed far advanced proximal tubular damage. There were EKG changes, hypotension, and evidence of hemolysis which probably indicated toxic effects from antipyrine on the hemotologic and cardiovascular systems.

Delirium, convulsions, decerebration, nystagmus and intention tremor were present which indicated that the cerebral hemispheres, brainstem and cerebellum were involved. Neuropathological study of the brain of the patient who expired revealed lesions of a nonspecific nature, compatible with either terminal ischemia, or toxic reaction, superimposed on older cerebral pathology. The combined ingestion of alcohol and antipyrine produced a most complicated and interesting group of clinical and pathological findings.

REFERENCES

1. Knorr. Einwirkung von Acetessigester and Hydrazinchinizin—derivate. Ber. dtsch Chem. Ges. 17:546-552, 1884.
2. Greenburg, L. A.: Antipyrine: A Critical Bibliographic Review, New Haven, Hillhouse Press, 1950.
3. Goldman, L. and Rockwell, E. M.: Prevention of Hypersensitivity Reaction to Drug with Simultaneous Administration of the Drug and Cortone, A. M. A. Arch. Dermat. & Symph., 64, 664, Nov. 1951.
4. Brocq, L.: Eruption Erythemato-pigmentee Fixe a l' antipyrine, Ann. de Dermat, et Syph. 5: 308, 1894.
5. Gleason, M. D., Gosselin, R. E. and Hodge, H. C.: Clinical Toxicology of Commercial Products, Baltimore, Williams and Wilkins Co., 1957, P. 946.
6. Ritchie, E. and Spiller, W.: Dermatitis Medicamentosa (Fixed type) From Use of 666 for Colds. (R) Arch. Dermat. and Syph. 59: 487-485, Apr. 1949.
7. McCulloch, H. and Zeligmann, I.: Fixed Drug Eruption and Epididymitis Due to Antipyrine. A. M. A. Arch. Dermat. and Syph., 64: 198-199, Aug. 1951.
8. Henington, V. M., Kennedy, C. B. and Snider, K. B.: Bullous Dermatoses in the Southern Negro. South. Med. J. 49: 39-46, (Jan.) 1956.
9. Kennedy, C., Davis, Frank H., Henington, V. Nedd., and Sternberg, Melville J. Dermatitis Medicamentosa Due to Antipyrene, A. M. A. Arch, Derm. 75: 826-836, (June) 1957.
10. Pharmindex, Portland, Ore., Skyline Publishered, Inc., Jan. 1965, P. 28, 30, 31, 32, 72, 74, 76.
11. Kastrup, E. K.: Facts and Comparisons, St. Louis, Mo., Facts and Comparisons, Inc., 1958, P. 188.
12. American Drug Index, Phila. and Montreal, I. B. Lippincott Co., 1964, P. 60.
13. Food and Drug Administration, T. C. 361, P. 2, April 4, 1941.
14. Pandi, K., Quoted by Greenberg, L. A. in Antipyrine, New Haven, Hillhouse Press, 1950, P. 26.

MYOCARDIAL INFARCTION DURING THYROTOXICOSIS

Review of the Literature and Case Report

• The clinical history of a 41-year-old Negro woman with myocardial infarction during thyrotoxicosis is presented. The available literature pertaining to this rare occurrence is reviewed and mechanisms discussed.

Crawford J. Barnett, Jr., M.D.
L. V. Anderson, M.D.
J. Richard Durham, M.D.

Myocardial infarction and thyrotoxicosis are common disorders, but their simultaneous occurrence is sufficiently rare to warrant a review of the literature and the report of a case. A factor of further interest is the less frequent occurrence of infarction in females with normal ovarian function over that found in post-menopausal women, or in men.

Our survey of the literature reveals only sixteen cases of myocardial infarction during thyrotoxicosis.(1,2,3,4,5,6) Of these, six were white women, five of whom were post-menopausal. The single report of a Negro woman, made by Littman et al,[2] stated that she was 51 years of age, presumably menopausal. She was thought to have had an acute coronary episode during surgery, after preoperative treatment with stable iodine. The occurrence was not well documented by electrocardiogram.

The following case, therefore, represents a unique concurrence of two common disorders.

Case Report

A 41-year-old Negro woman, also a licensed practical nurse since 1959, was first seen on 4/29/66. Annual physical examinations had been accomplished at the hospital where she worked. No abnormalities were noted until 1963, when the annual chest x-ray revealed beginning enlargement of the heart (in keeping with the insidious development of the hyperthyroid state at this age level). Following a hemorrhoidectomy in February 1965, she gradually lost 55 pounds in weight, despite a good appetite. She was aware of nervousness, mild intolerance to heat and intermittent diarrhea, and she reported heavy menses with a 6-7 day flow.

Her chief complaint consisted of chest pain along the right parasternal line, not associated with activity, and weakness of ten days' duration. An electrocardiogram taken at this time was abnormal, with T-wave changes suggesting ischemia and/or left ventricular hypertrophy. (See Figure I-A)

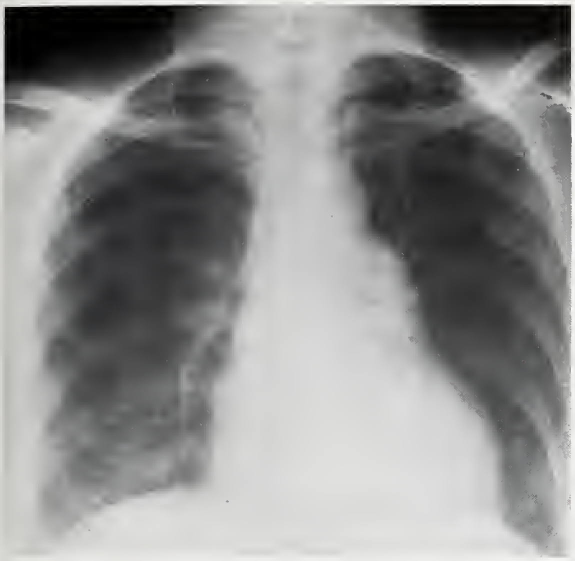
The patient was admitted to the hospital on 5/2/66. Physical examination revealed sinus tachycardia with a short, rough grade III/VI systolic murmur at the pulmonary area in the third interspace in the left para-

---

From the Department of Medicine, Section of Cardiology, Delaware Division, Wilmington Medical Center.

Dr. Barnett, formerly Resident in Internal Medicine, Delaware Division, Wilmington Medical Center, is presently Surgeon, Heart Disease Control Branch, U.S. Public Health Service, assigned to the Tennessee Department of Public Health, Nashville.

Dr. Anderson is Attending Physician; Dr. Durham is Head, Section of Cardiology, Department of Medicine, Wilmington Medical Center.



Chest X-ray

sternal line. Blood pressure ranged from 170/80 to 150/70. P II was loud and slightly increased, and a systolic lift was felt over the right ventricle. The peripheral pulses were strong. Her hands were warm and dry with a fine tremor; the skin was soft and smooth. The thyroid gland was slightly enlarged and was non-tender. No hyperthyroid eye signs or reflexes were found. During the first three days she complained of generalized pruritis, although no specific skin lesions were noted. Relief was obtained by the application of soothing lotions.

Thyroid status was evaluated by the following: serum cholesterol, 129 mg/100 ml; T-3, 52.8%; RAI-131 uptake, 44% at six hours, 57% at 24 hours; serum calcium, 10.6 mg/100 ml; phosphorus 4.3 mg/100 ml; and BMR, plus 47%. On thyroid scan, the gland was slightly enlarged, primarily in the left lobe. Thyroid antibody titer was zero, accomplished because some observers considered the possibility of acute thyroiditis. Her initial PBI was 20.4 mcg %, repeated ten days later with a high level of 13.8 mcg %. The chest x-ray suggested globular enlargement with fullness of the pulmonary outflow tract. (See chest x-ray)

Her first electrocardiogram during hospitalization (Fig. I-B) showed a changing pattern with T wave negativity over the left heart and ST elevation over the right heart. The first serum glutamic oxalocetic transaminase (SG-OT), done upon admission, was 87 King-Anderson units, rising to a maximum of 105 on the following day. (Note the T wave changes in Fig. I-B, 24 hours after the peak SGOT level.)

Because of persisting sinus tachycardia with her known hyperthyroid state, reserpine .25 mg t i d was started on 5/4/66. Six days later (Fig. I-C), a definite slowing of the rate and improvement of T wave definition was observed. Since it was recently reported that reserpine might cause a carcinoid syndrome in hyperthyroidism,[7] a 5-hydroxyindolacetic acid 24 hour excretion was determined, but this was found to be within normal limits.

The final tracing (Fig. I-D) showed deep T wave inversion as part of the expected evolution of a non-transmural, anterior myocardial infarction.

In view of her hyperthyroid state, complicated by acute infarction, medical rather than surgical therapy was elected. (Scan and palpation did not suggest malignancy, and we hesitated to risk surgery during an acute infarct.) I $_{131}$ treatment was also discarded because of the likelihood of eventual myxedema with its aggravation of atherosclerosis. Accordingly, methiazole, 15 mg q 6 hr was started on 5/22/66. On discharge, 5 days later, the dose was reduced to 10 mg four times daily.

One month later, her medicine was further reduced to 10 mg three times daily. Two months after discharge, on clinic follow-up, she had gained 10 pounds, was free of chest pain and denied nervousness. Her blood pressure was 130/80 with a pulse of 72 min. The electrocardiogram accomplished at this visit (not illustrated) showed erection of T waves and was interpreted as being within normal limits, although the T waves were somewhat low in V 4-6. T 3 had dropped to 29.5 %, and PBI to 9.9 mcg %. The patient has now returned to work remaining on methiazole 10 mg twice daily.

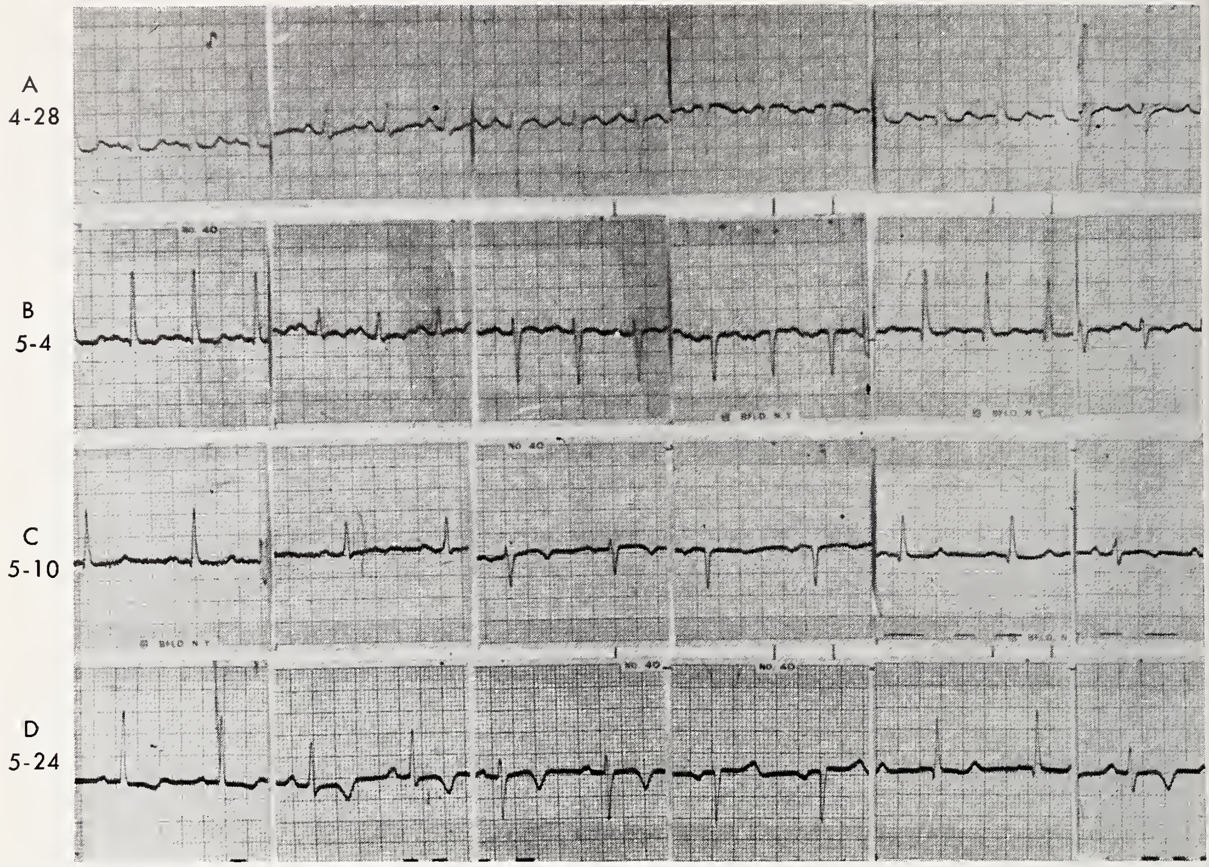


FIGURE 1. LIMB LEADS

Comment

While the anginal syndrome has been reported in hyperthyroidism, considered by Somerville and Levine[4] to be the result of the hypermetabolic state with demand greater than supply, the actual incidence of coronary atherosclerosis with infarction is low. Sommers and Surtees[5] reported only two cases of infarction in two hundred cases of thyrotoxicosis. Autopsy on one female who died at 79 revealed an old infarct. The other case, a male, died at 54 with a clinical diagnosis of infarction, without autopsy. Neither case was documented by EKG. On the rare occasions when infarction does occur, Gordon and Lenkei[6] postulate the following as causes: I) significant coronary disease may have been present previously, with the ensuing hyperkinetic and hypermetabolic state serving as a trigger mechanism, II) myocardial infarction may have resulted from an actual coronary embolus during an unrecognized episode of atrial fibrillation, or III) thyrotoxicosis, in some unknown manner, may cause direct damage to the coronary circulation.

Our patient's pruritis is interesting in view of Barrow and Bird's report[8] on pruritis in hyperthyroidism relieved with propylthiouracil. They state the cause is not clear, but suggest the mechanism could be increased release of bradykinin in the tissues, potentiation of norepinephrine by excess of thyroxine, or both.

Conclusion

The hyperthyroid state is believed to protect against atherosclerosis by the low cholesterol and lipid levels found in hypermetabolism. In addition, the ovulating female is said to be protected by her high estrogen level. Nevertheless, we postulate that a rare case of

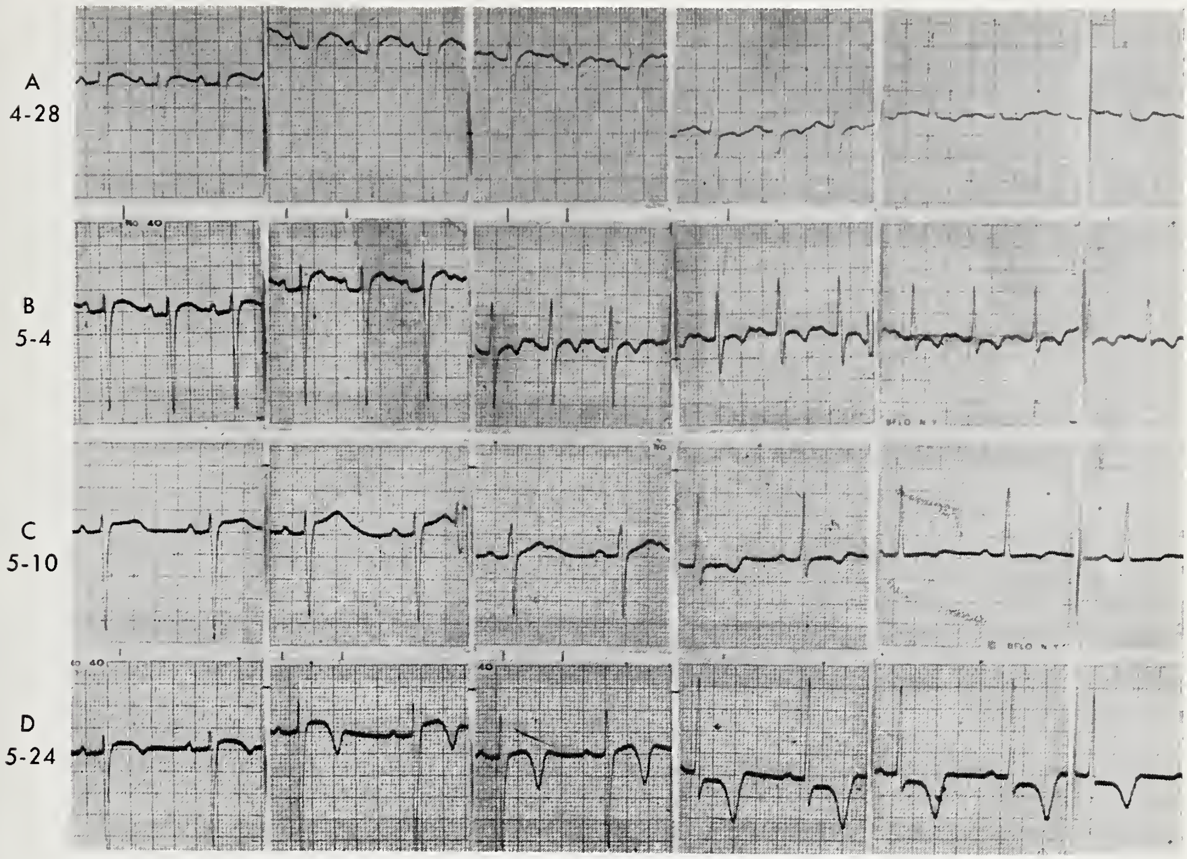


FIGURE 1. CHEST LEADS

concomitant hyperthyroidism and myocardial infarction in an ovulating female may occur due to severe, long-standing disease in one of the coronary vessels, and/or inheritance of a diminutive coronary arterial system. With the increasing use of cine-angiography, this question may be answered. We have not discussed the racial factor here, mainly because of lack of comparative studies. However, as pointed out by Thomas et al[9] and McVay and Keil,[10] coronary disease is divided almost equally between males and females in the Negro race (in contrast to the white race), possibly because of the high rate of hypertension in the Negro female.

REFERENCES

1. Grytting, G. and Salvesen, H. A. "Thyrotoxicosis and Myocardial Infarction". *Acta. Med. Scand.* 157:169-171 (1957).
2. Littman, D. J., Jeffers, W. A. and Rose, E. "The Infrequency of Myocrdial Infarction in Patients with Thyrotoxicosis". *Am. J. Med. Sc.* 233:10-15. (1957).
3. Burstein, J.,Lamber, B. A. and Eramaa, E. "Myocardial Infarction in Thyrotoxicosis". *Acta. Med. Scand.* 166: 379-393. (1960)
4. Somerville, W. and Levine, S. A. "Angina Pectoris and Thyrotoxicosis". *British Heart J.* 12:245-257. (1950)
5. Summers, V. K. and Surtees, S. J. "Thyrotoxicosis and Heart Disease". *Acta Med. Scand.* 169:661 (1961)
6. Gordon, J. A. L. and Lenkei, S. C. M. "Thyrotoxicosis Associated with Myocardial Infarction". *Can. Med. A. J.* 99:1128-1129. (1964)
7. Blumenthal, M., Davis, R. and Doe, R. "Carcinoid Syndrome Following Reserpine Therapy in Thyrotoxicosis". *Arch. Int. Med.* 116:819-823. (1965)
9. Thomas, J., Calhoun, C., Ball, O. T., Anderson, R. R., and Mennely, G. E. "Acute Myocardial Infarction in Ninety Negro Patients: Clinical Manifestations and Immediate Mortality". *Am. J. Card.* Vol. 8: 178-183 (1961)
10. McVay, L. V. and Keil, P. G. "Myocardial Infarction with Special Reference to the Negro". *Arch. Int. Med.* Vol 96: 762-767. (1955)

Diabetes for Diabetics, a comprehensive book for the layman, should be recommended to patients by the physician. The profits of the Diabetes Press go to camp scholarships for diabetic children.

HIGHLIGHTS OF THE FIRST NATIONAL CONGRESS ON SOCIO-ECONOMICS OF HEALTH CARE

Allston J. Morris, M.D.*

The First National Congress on the Socio-Economics of Health Care was sponsored by the Council on Medical Service and the Division of Socio-Economic Activities of the American Medical Association and was held in Chicago on January 22 and 23, 1967. Its purposes were: first, to signify the medical profession's concern for the effective organization, delivery, and financing of Health Care Services; and second, to bring together authorities from medicine, health care administration, social science, education, community planning, and other disciplines to report on new issues and technics in this area.

James L. Dennis, M.D., Dean of the University of Oklahoma School of Medicine, put into perspective some of the forces which are bringing about a shifting social scene and its consequent impact on the health care system. Significant advances in knowledge and technology have always brought about an acceleration in the rate of social changes, and Dr. Dennis pointed out that it was only immediately following the industrial revolution that Bernard, Pasteur, Semmelweiss, Lister and Koch established the principles that led to modern scientific medicine. It has been the technology of scientific medicine that made it possible for man to control plagues and to contain maternal and infant mortality rates that previously had decimated the human race, but by so doing, medicine had opened the lid to "Pandora's population box" and had ignited the fuse to the population explosion.

It is by all odds the population explosion which is the most powerful force behind the pressures that have affected and will continue to affect the patterns of medical practice. All else is secondary. However, most important among these secondary factors are public attitudes and expectations. We have a mass consumer society enriched by public education, mass communication, and collective affluence. The constantly increasing expectations of this well informed society generate most of the socio-political pressures that have decisive influence on matters affecting patterns of health care.

Dr. Dennis went on to point out that health programs for which there is increasing expectation among the population at large are basically "people at work"—skilled people who must be produced by education and training. However, there is now a shortage of trained medical manpower. This shortage is aggravated by maldistribution. There are serious problems in the central cores of our major cities and critical deficits in rural areas.

In an effort to meet the rising expectations of the population of Oklahoma for improved health care services and to solve some of the problems of shortages of medical manpower, the Oklahoma Plan was developed. Its basic approach is that Oklahoma's growing health needs can be met only by the combined efforts of citizens, the practicing professions, state and voluntary health agencies, and the state's university medical center.

To put into operation this philosophy, the Oklahoma Health Center was devised. Coordinating the Oklahoma Health Center was a non-profit corporation comprised of "blue ribbon" citizens representing every section of the state and this group has been incorporated as the Oklahoma Health Science Foundation, Incorporated. The goals of this foundation may be described as follows: to attract, encourage, and assist private and public institutions and agencies related to the public health, health science, education, bio-medical research, and patient care; to locate in a functional relationship to the University of Oklahoma Medical Center according to a master plan. At the present time a long list of public and private institutions and agencies are committed to locate in geographic proximity in this health center. At the same time, there is being developed a division of family medicine —a program to explore and evaluate the contents of family medicine. This activity will have a separate and especially designed model community clinic that is purposely separate from the University clinics.

---

*The meeting was attended by the author and Joseph E. Belgrade, M.D.

There is also a pilot program in rural health which was discussed later in the program and a health manpower intelligence facility which is a permanent program established for the continuing inventory of health manpower in the region to provide the basis for planned production of appropriate numbers and kinds of health manpower.

Later in the program Thomas C. Points, M.D., Ph.D., Coordinator of Project Responsibility, University of Oklahoma Medical Center, discussed the problem of rural health care in Oklahoma. He started by pointing out that 20 years ago almost every family in Oklahoma had access to a family doctor. Then some astonishing medical and scientific advances, specialization, industrialization, a shift of the young from rural to urban living, more and larger hospitals and medical centers, better roads and transportation, and the population explosion and many other factors came about and the availability of family doctors decreased. He pointed out that surveys to assess the reasons for physicians leaving or of new ones not going to small communities usually have shown economic or income dissatisfaction to be of relatively small importance. The causes are shown more often to be a dearth of social and educational opportunities, inadequate time for study or attending professional meetings, lack of educational stimuli, and absence of cultural opportunities. It is basic that we do not wish to dictate the kind of practice or the place of practice for physicians. Physicians will go where they are attracted. Hence, rural practice must be made attractive to physicians and other health personnel if the rural health service needs are to be met. Many communities feel that all they must do is build a clinic or a small hospital and this will attract a physician. In reality, the basic deficit of rural health services are those of health personnel. Physical facilities alone will not attract and hold that personnel.

A four-phase project has been established as follows: Phase 1 provides for a state-wide inventory of health science personnel now serving the people of the state. Phase 2 provides for projection of current and anticipated needs. Phase 3 will re-evaluate medical school curriculum and hospital training programs on the basis of these documenteed needs. Phase 4 provides for a pilot study in the "packaging" of medical services in rural areas.

Dr. Points described the first pilot community health center. This will be located in the town of Wakita, Oklahoma, which is in a county served by only one physician who is 77 years old. Although the town of Wakita has a population of only 450, some 8,500 people live within a 20-mile radius. Their closest medical facilities are 40 miles dstant. Ths communty has subscribed some $250,000 to provide the community health center. It will be located on a 23 acre tract of land, and in addition to the health center, it is planned to develop a community house, park, swimming pool, fishing pond, housing for older citizens, heliport, and possibly even a motel. The health center will consist of professional offices and treatment rooms for a minimum of three physicians and appropriate space for a supporting force of paramedical workers. The supporting services will include a laboratory, x-ray, and a delivery room. Contiguous with these will be a 35 to 50 bed extended care facility with 10 beds set aside and equipped for acute patient care. The rural community health center will care for acute emergencies, uncomplicated deliveries, and patients with non-serious illnesses. It will be staffed by permanent physicians who will live in and become part of a community. Initially, there will be an internist, a pediatrician, and a well trained general practitioner. All will perform as family physicians and each will learn from the other.

The health center will be considered as an integral part of the University of Oklahoma Medical Center's teaching program. The physicians of the group will have active teaching appointments at the University, and each physician will be expected and required to schedule two or three days each month at the medical center in Oklahoma City. These days will be spent both as teacher and student. Teaching consultants will be assigned scheduled visits to the community health center. The physicians will charge standard fees for their services as will the hospital portion of the center. Thus, Oklahoma would seem to be experimenting with one interesting method of solving the health care needs of rural Oklahoma.

A parallel problem in providing medical care for the indigent populations within a city was discussed by Mark H. Lepper, M.D., of Chicago. Dr. Lepper first showed that the health status of the poverty population is poor in relation to areas in which most progress has been made. He pointed to high infant mortality rates, high birth rates among young mothers, and premature births, and further pointed out that, even though poor whites do worse than their more affluent counterparts, the non-white population is much worse off. The specific death rates for cancer of the cervix, tuberculosis, and venereal diseases correlate with living in poverty. He further showed that, in spite of considerable evidence of higher disease rates, the poverty population gets less care in the hospital and there are fewer physicians available to treat them.

Dr. Lepper listed four principal requirements of comprehensive care. 1. Problems of initiating health care. 2. The availability of comprehensive care. Here it is pointed out that the nonindigent patient is able by the use of the telephone to have available medical care on a 24-hour basis. Such services are less accessible to the indigent. Thirdly, continuity of care. Here it is pointed out that by and large when a non-poverty group individual seeks the services of a physician, he anticipates that appropriate decisions and arrangements for the care of his illness will be made and relatively little further initiative on his part is needed. Persons of the poverty group cannot make this assumption. Fourthly, completeness of care is less satisfactory among the poverty group.

In order to alleviate the problems presented by the current situation, there are two major approaches. One is to amplify what is currently being done by expanding facilities and by adding personnel. The other is the institution of new organizational patterns designed to allow the care of these patients to approach as nearly as possible that of the entire population.

To propose that every patient shall have a single physician would be to propose the unobtainable. Therefore, the development of new roles for present personnel as well as new organizational forms is an essential of the proposed family health centers which are being developed in Chicago. Three echelons of care will be represented. The first echelon of care is represented by the public health nurse who shall visit homes, evaluate health needs of the family, and be the health advisor and coordinator of the health care. She would work out of a comprehensive health care center.

The second echelon of care is provided by the family health center. This will include the following services: family planning, prenatal care, infant welfare, complete pediatric clinic (including preventive, diagnostic, and treatment facilities for acute illness), adult program for detection of disease, health education, acute and chronic long term care of ambulatory patients. Probably 80 to 90% of the ambulatory care can be handled in this center. This center would be located in the community near the patient, but would be attached to or affiliated with a medical school teaching hospital or community hospital. That institution would represent the third echelon of care. It would represent the referral center for those patients needing extensive diagnostic work-up or evaluation in subspecialty areas and for in-patient hospital care. Two such centers are under way toward opening in Chicago.

Such an approach to community health problems in an urban area would no doubt result in diminished utilization of emergency room facilities.

Fred A. Spencer, M.D. and MPH, of Richmond, Virginia, Professor and Chairman of the Department of Preventive Medicine, Medical College of Virginia, presented another approach to the problem of solving manpower shortages. He stated that the present number of physicians in the United States is unable to deal with the increased demand for medical services. There is, therefore, an interest in the more economical use of present health personnel and also in the training of different types of health personnel.

Dr. Spencer then talked of several sorts of physician assistants. In Fiji late in the 19th century certain natives were trained to vaccinate the population against smallpox and these individuals have been given increasing medical education until at the present time they are comparable to general practitioners in any part of the world. A similar, though less well trained, physician assistant is being used in New Guinea and in Iran where he is called the behdar. Russia is using a feldsher.

All physician assistants must, of course, be under the supervision of physicians. In the United States, Duke University has trained, or is training, clinical physician assistants who act under supervision in the hospital services, and the Unversity of Colorado is training public health nurse pediatric practitioners to work with underprivileged families in Colorado. It would seem that in the United States there is more place for this type of individual in preventive medicine, particularly in patent counselling where the physician does not have time to explain his management to the patient.

Finally, Victor W. Sidel, M.D., Chief of Preventive Medicine, Massachusetts General Hospital, discussed the concept of "end result" or "outcome" analysis as a technique for assessment of medical staff quality care in hospitals.

This concept was early introduced in 1918 by Dr. Ernest A. Codman, a surgeon on the staff of the Massachusetts General Hospital. Dr. Codman at that time wrote, "*The trustees of our charitable hospitals do not consider it their duty to see that good results are obtained in the treatment of their patients. They see to it that their financial accounts are audited, but they take no inventory of the product for which their money is expended since the product is given away; they do not bother to standardize it and to see whether it is good enough to be sold.*" Dr. Codman went on to state that it is "*Against the individual interest of the medical and surgical staffs of hospitals to follow-up, compare, and analyse and standardize all their results.*" Dr. Sidel then went on to list the objections to end result analysis. These may be briefly listed as follows:

1. Outcome may be unrelated to quality of care because the medical science simply lacks knowledge to deal with the problem.

2. Outcome may be irrelevant to the patient's problem. As for example, when survival is used as an outcome criterian in diseases in which disability rather than death is the usual result.

3. Many factors other than medical care influence outcome.

4. For many diseases long periods of time must elapse before the relevant outcomes are clear.

5. The demonstration of a less than optimal result may lead to criticism or legal action against the physician or hospital.

6. It is very difficult to induce physicians to criticize the results obtained by colleagues.

In view of the difficulties in evaluating outcome, two methods are now being used to characterize care which may be summarized under the headings of *Structure* and *Process.*

Under evaluation of structure come most of the traditional analyses that the joint commission on accreditation have used—is the physical plant adequate? Are there special facilities such as laboratories, blood banks? Are there departments and committees? How well are the personnel trained? Such a study of structure helps to insure that there is a basic minimum of facilities that tells little about how the facilities function and nothing about their relevance to high quality care.

The study of processes works in the following manner: 1. The statistical approach where one may study utilization rates for special procedures such as chest x-rays, serological tests for syphilis, etc. 2. The record review approach, or medical audit. It may involve detailed review and analysis of the record by well qualified physicians or by an independent evaluating group. 3. The practice observation approach. In this approach physicians and other personnel know that they are being observed and, so to speak, graded. The difficulty with these increasingly used assessments of structure and process is that they tell us little about the value of the structures and the processes they demand. All an assessment can ask of these techniques is whether the best of the conventional wisdom has been practiced. Such assessment can tell us practically nothing about the value of the conventional wisdom.

Dr. Sidel suggests that one place to start end result determinations is within the hospital where determination of hospital acquired infection, adverse drug reaction, and other hazards of hospitalization may be carried out. Such studies are being incorporated into the activities of the utilization revew commttee at the Massachusetts General Hosptal. Special groups are developing outcome criteria relevant to the hospital's goals and initiating post discharge outcome studies.

The wide range of subjects presented above and the comparative novelty of many of the ideas put forth gives some idea of the range of this first Congress on Socio-Economics of Health Care. Many of the ideas set forth, if not immediately applicable close to home, give considerable food for thought and suggest many avenues of study and perhaps even of action.

CLINICAL NOTICES AND MEETINGS

PG Course Hahnemann	Current Postgraduate Education Course sponsored by Department of Medicine, Hahnemann Medical College: April 10-12, 1967, 18th Hahnemann Symposium: *Epithelial-Mesenchymal Interactions.* *General Internal Medicine* will continue each Wednesday, 1-4 P.M., through March 29.
Philadelphia County Medical Society	Annual Postgraduate Institute of the Philadelphia County Medical Society will be held April 11-14, 1967, at the Bellevue-Stratford Hotel, Philadelphia. Registration: $50 for entire period; $15 for individual days. Send inquiries to: 2100 Spring Garden St., Phila., Pa. 19130.
V. A. Hospital (Coatesville)	*Preparing the Long-Term Patient for Return to the Community* is the subject of the tenth Neurophychiatric Institute, co-sponsored by the Chester County Medical Society and the Veterans Administration Hospital, Coatesville, Pa., to be held April 13 & 14, 1967, at the V. A. Hospital.
Cancer Congress	The 3rd Pan American Cytology Congress, will be held May 7-11, 1967, at the Waldorf Hotel, New York City . . *To curb cancer cytology through diagnosis.*
Illinois PG Course	A special postgraduate course in Laryngology and Bronchoesophagology will be given from April 10 through 22, 1967, by the Illinois Eye and Ear Infirmary and the College of Medicine of the University of Illinois, Medical Center, Chicago. The course will be limited to 15 physicians.

Letters to the Editor

Dear Editor:

A few members of the Medical Society of Delaware have indicated a lack of understanding of the purpose and position of the Child Diagnostic and Development Center of Delaware, Inc., in the medical community of the state. In an effort to answer their questions and those that others may have, I have decided to write this letter to the Journal.

The Child Diagnostic and Development Center of Delaware, Inc., established through the efforts of the Coordinating Council for the Handicapped Child in 1964 has as its purpose the complete evaluation of the handicapped child in order that his total needs may be met—surgical, medical, emotional, educational, and social.

At the first Delaware Conference on the Handicapped Child held at the Alfred I. duPont Institute in June, 1962, the representatives of 28 participating agencies discussed the need for coordination of their activities. As a result, the Coordinating Council for the Handicapped Child was formed. At an early meeting of this Council, the members considered the great need for a center to coordinate activities for the individual child with multiple handicaps to assure his receiving complete evaluation and a program of management adapted to his individual needs. A special committee was appointed by Dr. A. R. Shands, Jr., the Chairman of the Coordinating Council for the Handicapped Child, to investigate the desirability and feasibility of such a center. The personnel of all agencies concerned with various aspects of the care of children with handicaps were enthusiastic in their support, and the Child Diagnostic and Development Center of Delaware, Inc., was soon in existence with the following stated purpose:

"*To provide for the evaluation, management, and continuing follow-up of children in Delaware with handicaps involving the neuromuscular system, vision, and hearing, a large percentage of whom have physical or mental retardation.*"

I believe this statement indicates that the Child Diagnostic Center is not a treatment facility, but provides for coordination of services for the individual by soliciting the cooperation of therapists and treatment facilites through good communication between the Center and agencies providing treatment resources.

The children who are accepted for evaluation at the Center present symptoms of Cerebral Dysfunction as described by Dr. Eric Denhoff:

1. Neuromotor—Cerebral palsy, various types
2. Intellectual—Mental Retardation, organic
3. Consciousness—Convulsive disorders
4. Neurosensory—Vision and hearing impairments
5. Behavioral—Hyperkinetic behavior disorders
6. Perceptual—Visual and auditory perceptual disorders

The objectives of the Child Diagnostic and Development Center of Delaware, Inc., are three:

1. To provide patient service.
2. To provide community service.
3. To provide an information and referral service for handicapped children.

In providing patient service, it is the goal of the Center to assist children who are functioning at less than the level expected for their chronological age to obtain their maximum potential by:

1. Providing evaluation of the children's physical, mental, social, and emotional assets and liabilities by a multipl disciplined team, consultants, and laboratory examinations in order to plan wth the children's referring physicians, schools, and agencies the most appropriate services to be utilized.

2. Interpreting the evaluation team's recommendations to the families.

3. Transmitting the results of the diagnostic procedures to professional persons charged with the treatment, training, education, and care of these children.

4. Referring the evaluated children to the appropriate service giving agencies.

5. Following up children evaluated to determine if recommendations are being carried out, and

6. Re-evaluating individuals periodically as indicated.

In providing community service, the Child Diagnostic and Development Center of Delaware, Inc., has three objectives:

1. To orient the professional personnel in the fields of health, education, and welfare to the team approach in meeting the total needs of handicapped children.

2. To orient the total community to a new method of providing comprehensive team evaluation services and effective referral services for handicapped children, and

3. To increase and improve communication and cooperation among community agencies serving the handicapped.

The Child Diagnostic and Development Center of Delaware, Inc., tries to provide an information and referral service for professional personnel by:

1. Maintaining a supply of useful books and journals in the areas of handicapping conditions that are available on loan.

2. Maintaining a file on services, agencies, schools, and residential facilities for handicapped children.

3. Providing information relative to services for handicapped children by telephone or mail to those requesting this service.

4. Referring directly to the appropriate service giving agency following staff review of data collected on intake those children who appear to have had adequate diagnostic workups elsewhere.

The Child Diagnostic and Development Center of Delaware, Inc., is not in the private practice of medicine but hopes to work cooperatively with physicians in practice to assure that all children in Delaware with multiple handicaps receive all needed professional services on an individual basis. No child referred by a school or agency is accepted for evaluation without the approval of his family physician or pediatrician. Fees for evaluation services are charged on a sliding-scale basis in accord with the family's ability to pay.

It is hoped this letter will clarify the position of the Child Diagnostic and Development Center of Delaware, Inc., in the medical services provided children in Delaware.

Respectfully submitted,

Henry H. Stroud, M.D., *Director*

A manual entitled *Adoption of Children*, provides in-depth information of primary importance to pediatricians and deals with all facets of the adoptive process. Copies of the book may be obtained from the American Academy of Pediatricians for $1.50 per copy.

President's Page

. . . Of interest to the Profession are the comments on H. R. 5710 introduced by Rep. Wilbur Mills, D-Ark.

Following is a synopsis of a summary of major Medicare and welfare health proposals in H.R. 5710, the administration's Social Security Bill introduced February 20 by Rep. Wilbur Mills, D-Ark. The summary is by the Department of Health, Education and Welfare:

1. All hospital out-patient services and in-patient diagnostic x-ray and laboratory services provided by physicians would be covered under a new Part "C". Only Part "A" participants would be covered for the physician's in-patient diagnostic x-ray and laboratory services and there would be no deductible or co-pay provision. Only Part "B" enrollees would be covered for hospital out-patient services subject to the regular Part "B" $50 annual deductible and 80 percent co-pay.

2. Provision would be made to require funding of depreciation payments to providers and allow use of the amounts for either capital or non-capital purchases only under conditions approved by state planning agencies.

3. Initial physician certification of medical necessity would not be required in general hospitals. Physicians would still be required to provide initial certification in psychiatric and tuberculosis hospitals. Remaining intact would be the requirement for a physician's certification after in-patient hospital services have been furnished over a period of time, as is now done by recertification. The requirement for a physician's certification for out-patient hospital diagnostic services would also be eliminated. There is added emphasis on "screening by administering agencies to isolate those cases in which the diagnosis and treatment raised questions."

4. Medicare payments would be made to federal facilities to which beneficiaries are admitted.

5. Podiatrist's services would be covered under Part "B". Excluded would be routine foot care, whether provided by a medical doctor or a podiatrist.

6. Under present law, in-patient days spent by an individual in a psychiatric or tuberculosis hospital immediately prior to eligibility are deducted from the days of in-patient hospital services available. This deduction would no longer apply and once the individual becomes eligible for Medicare benefits he would be entitled to the 90 days of in-patient hospital services.

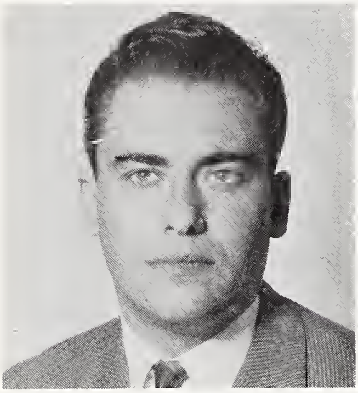
7. In present law, services of an intern or resident are covered as in-patient hospital services in Part "A" when rendered under an approved teaching program. Present law covers in Part "B" payments to physicians who have a limited license and are authorized to practice as physicians only in a hospital. Services of these physicians, under the proposal, would be covered under Part "A" in the same way as the services of interns and residents are covered.

8. The Bill provides Part "A" and makes available Part "B" for disabled SSA beneficiaries, including disabled workers, disabled adults getting benefits for disabilites that have continued since childhood, and disabled widows under age 65—and for qualified disabled railroad retirement annuitants.

H. Thomas McGuire

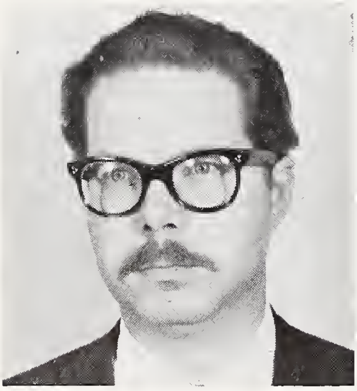
New Members

Charles L. Minor, M.D., Harvard Medical School, '47, was born in Washington, D.C. Delaware License: 1966; Specialty: Pediatric Surgery; Office 1000 N. Broom St., Wilmington. The Minor family includes 4 children, ranging from 6 months to 7 years of age. Dr. Minor likes gardening, bird watching, stamp collecting, reading and photography.



Carlo A. Cuccia, M.D., was born in Palermo, Italy, and received his medical training at the University of Milano, Italy, '48. A very recent resident of Wilmington (Delaware License, 1966), Dr. Cuccia spent 5 years in Texas and 9 years in Baltimore. Specialty: Radiotherapy; Office: Wilmington General Division, Wilmington Medical Center. Dr. Cuccia is interested in early Italian literature which is his hobby. He has a son, 13 years old.

Jack R. Zahn, M.D., Yale University School of Medicine, '38, was born in Columbus, Ohio. He is a member-transfer from the Gloucester County Medical Society, New Jersey. Specialty: Industrial Medicine; Office: E. I. du Pont de Nemours & Co. Dr. Zahn has 3 children and 2 grandsons; likes to play golf and "mess around in boats."



Richard Winkelmayer, M.D., University of Vienna Medical School, '54, was born in Vienna, Austria. He obtained his Delaware license in 1966. Specialty: Psychiatry; Office: Delaware State Hospital, Wilmington. Dr. Winkelmayer has been in this country since 1956 and has two children; a boy, 4 and a girl, 9 months old. In his spare time, he likes to paint.

Editorials

REGIONAL PLANNING

Recent progress in the area of Regional Planning for Heart, Cancer and Stroke is worthy of note. During the middle of March a site visit by members of a team from the National Institutes of Health was made to examine the recent proposal for a planning grant for the Greater Delaware Valley Region. This site visit team included Dr. Michael DeBakey, the program's author. The five medical schools in Philadelphia using the University City Science Center as an agency submitted it's second proposal very recently. This is for a planning grant to study the feasibility and if possible outline a modus operandi for a regional program in Heart, Cancer and Stroke.

One of the main purposes of these regional programs is specifically for continuing education. The planning is to design a mechanism for the spread of new knowledge rapidly from the Center (Philadelphia's Five Schools) through secondary centers (large community hospitals, such as the Wilmington Medical Center) and out to the periphery (smaller community hospitals). Hopefully, this most recent proposal of the UCSC will be accepted and the planning can begin.

It now seems clear that the federal government does not want to divide Philadelphia into more than one region. In making this decision, Philadelphia and the Greater Delaware Valley Region, which includes 8,000,000 people, becomes one of the largest and most complex in the country. At the same time, it has some of the greatest resources to draw upon. Under the present plan, this region includes Philadelphia, Camden, parts of New Jersey as far as Trenton, Pennsylvania—west to Harrisburg and Delaware's New Castle and Kent Counties. Of local importance is a recommendation under the grant that a member of the planning team be physically located with an office in either New Castle or Kent County.

Sussex County has been split off to be included with Maryland in the region centered around Baltimore. It seems a mistake to me that a state as small as Delaware couldn't be under one region. This, I would think, would have many advantages and splitting the State many disadvantages. It seems clear that the final decision will not be made in Philadelphia or Washington, but will be made by Sussex County. The regions as presently described are only provisional and are not intended to be specific geographic limitations. The planning grants are to be used to work out the final dimensions of each region.

It is in this planning phase that the medical community of Delaware with it's on site representative of the planning team, will have it's chance to listen and be heard and thus work with the University City Science Center to devise the best possible plan for communication and dissemination of knowledge throughout the region.

It has been suggested that the newly formed Health Facilities Planning Council for the State of Delaware might function as the agency to coordinate the various facilities in this State and to keep everyone informed on the progress of the Heart, Cancer and Stroke Program. This would seem not only logical but made to order.

The Health Facilities Planning Council has just appointed an Executive Director who has already been in touch with the University City Science Center and has been named as one representative for the State of Delaware to the Heart, Cancer, Stroke Program. Your Editor urges that the services of the Health Facilities Planning Council be used as a clearing house for ideas so that the UCSC will not be deluged by well meant but unilateral planning.

Delaware Academy of General Practice

THE FAMILY PHYSICIAN

Physician Training in Comprehensive Medical Care to the American Family

On February 14, 1967, at the Palmer House in Chicago, there was an all day meeting on the plans for—and the problems in—physician training for comprehensive care of the American family. There were seven speakers on the program and a panel discussion following their presentations.

Dr. Carroll Witten, President of the AAGP, spoke about the CORC report, ie. the report of the committee on requirements for certification. He pointed out that the only salvation for General Practice is to give it specialty status. Medical student education these days is oriented toward specialization because most medical schools have no General Practitioners on their teaching staff. Many medical educators are beginning to agree that it is probably wise to have students exposed to General practice to see the problems that lie therein. The service that is rendered by a Family Physician that a team of specialists cannot give is the continuous and comprehensive care required by most families. Dr. Witten stated that many medical school deans have already asked the AAGP to help establish the teaching of Family Medicine in undergraduate schools.

The preliminary application for specialization has been approved by the AMA liaison committee. We are now able to proceed in proving that General Practice is truly a field for specialization—and we hope to be Number 20 in the recognized medical specialty boards.

Mr. James Bryan, a consultant in medical education, stated that we must find ways to make the newer aspects of medical research and knowledge available to the American public—through programs of continuing care. But this will create a new breed of MD—and we must answer these questions:

1. How will we educate him?
2. What can he be expected to do?
3. How are we to set up the machinery to get this program underway?

Society feels today that the physician is drawing away from his responsibility to patients—because he feels that:

1. There is lack of professional prestige for General Practice, and consequently, a lack of public prestige.
2. There is no push from the Medical School toward Family Practice.
3. There is a lack of economic support.
4. The function of Family Practice has no intellectual contest—there is no limiting parameter to the scope of practice.

But does the public really want the General Practitioner? Yes. The confrontation of patient and doctor will continue, and this is a function of General Practice. However, the present day General Practitioner has too much work to do to keep up with the rapid progress of medicine today. It is more difficult to treat the patient as a real person than as a disease entity. Thus to be one of the new group of General Practitioners would require much more intellectual and diligent men than was the basis of General Practice 20 years ago. He must know more about the psychology of people—their human as well as disease states—and how best to communicate with these people in today's rapidly progressing computerized society.

Will this comprehensive care be rendered by one individual or by a group of specialists? Many medical education conferences feel that one individual as a primary physician can best facilitate good medical care using specialists as expert adjunct therapy—but he should be the key man in securing patient care.

In his summation, Mr. Bryan stated that the General Practitioner

1. Must be a specialist by inclusion and not exclusion.
2. Must have a definite spectrum of functions (not organs as other specialties)
3. Must have an ego satisfying state in which to work.
4. Must control primary medical care and diligently delegate needed care of specialists.

Dr. John Millis, President of Western Reserve University, discussed the rapid growth of knowledge today. He explained that a professional is a modest knower and a skilled doer; a scholar has much knowledge and no skill, and a skilled technician has no knowledge but much skill. Today's learned professional is a bivalent person—both a knower and a doer.

In our world today, the knowledge explosion has far outstripped the advance of the application of new technical skill. There is a much smaller time lag between gaining of new knowledge and application to applied skill. Our world now expects them to be simultaneous—and this related to medicine now portends the lack of new knowledge and skill on the GP. Thus in past years basic science knowledge was sufficient to carry a person through the period of applied skill in his working years. This is not true today. Thus the entire concept of education—both knowing and doing—must undergo new methods of teaching and learning processes must be altered, lest we fall so far behind we will never catch up.

Thus specialization would seem to be the logical answer—we get to know more and more about less and less, ascending the pyramid of knowledge and skill to the summit of specialization.

A new physician could also evolve in this manner. As research progresses further and further upyards and knowledge grows likewise, medical students can be adapted to this program and develop as rapidly in the application of this technical skill. But the evolution of the *Primary Physician* is a formidable task, never to be accomplished by a rearranging of the present methods, but requiring a radical new approach.

Henri F. Wendel, M.D.

CLINICAL NOTICES AND MEETINGS

Post Graduate Teaching Day	A Postgraduate Teaching Day under the auspices of Columbia University College of Physicians & Surgeons and the Hospital for Joint Diseases & Medical Center will be given April 26, 1967, at the hospital. Fee: $25.00. For registration: Mrs. Alice Altmayer, Secretary, Hospital for Joint Diseases & Medical Center, 1919 Madison Avenue, New York City, New York, 10035.
Heart Association	The Heart Association of Northern Virginia and the Washington Heart Association are sponsoring a Joint Cardiac Symposium, April 27, 1967, 9:00 a.m.-4:00 p.m. at the Marriott Twin Bridges Motor Hotel, Persian Room, Washington, D.C.
Maryland Meeting	Members of this Society are invited to attend the 169th Annual Meeting of the Maryland Medical and Chirurgical Faculty on April 19-21, 1967, at the Alcazar, Baltimore, Maryland. No registration fee. Credits given by the AGP.
I.C.S. Congress	The North American, Central American, and Carribean Federation of the *I.C.S.* will hold its Annual Congress at the American Hotel in Bal Harbour, Florida, April 30 through May 4.
Industrial Health	The American Industrial Health Conference will be held in New York City, April 10-13. The course subjects will include *"Hearing and Hearing Conservation"; "Cancer Screening in Industry"; "Vision and Sight Conservation"; "Health Programs in the Radiation Industry" "Behavior Problems in Industry"; "Automated Techniques in Health Examinations"; "The Cardiac in Industry"; and "Occupational Medicine and Human Engineering."*

In Brief

Speakers on "Doctor's House Call"

Speakers for April, 1967, on the Tuesday radio program, (11:05 a.m., WDEL) produced by the Medical Society of Delaware are: April 4: Pierre LeRoy, M.D., *Seizures;* April 11: S. S. Bjornson, M.D., *Pathology;* April 18: Warren Johnson, M.D., *Infant Feedings;* April 25: James P. Aikins, M.D., *Anesthesia for the Aged.*

Radio Seminar Curriculum

The Radio Seminars conducted by the Pennsylvania Hospital are held at the Wilmington Medical Center, Memorial Division, Tuesday at 12:00 noon with luncheon served. The course is approved for 24 credit hours by AAGP. Sydney Stat, M.D., is moderator. Final program:
Mar. 28, 30: *Complications of Gastric Surgery*, Alexander Rush, M.D., Physician to Pennsylvania Hospital.
April 4, 6: *Hepatic Failure*, C. Wilmer Wirts, M.D., Professor of Clinical Medicine, Jefferson Medical College.
April 11, 13: *Ulcerative Colitis*, Edwin M. Cohn, M.D., Assistant Professor of Gastroenterology, Graduate School of Medicine, University of Pennsylvania.

Seaford Seminars

The Lecturer-Consultant program, sponsored by the Medical Society of Delaware under the directorship of Leonard P. Lang, M.D., is held at the Nanticoke Hospital at noon. The next lectures are:
April 13: Lawrence Katzenstein, M.D., *Common Dermatological Problems;* May 11: Mark G. Cohen, M.D., *Septic Shock*

Diabetes Spring Workshop

The Delaware Diabetes Association is conducting its Spring Workshop Program on Diabetes at the Academy of Medicine, Wednesday, April 12th at 8 p.m. This is open to the public. The following subjects will be covered:

1. Insulin vs. Tablets
2. Diagnosis of Diabetes
3. Eyes and Diabetes
4. Diet and Diabetes
5. Pregnancy and Diabetes
6. Care of the Feet
7. Children with Diabetes
8. Supplies and Equipment

A film on diabetes will also be shown—title to be announced. Program committee co-chairmen are Charles A. Levy, M.D., and Mr. B. V. McCready.

Personal Glimpses

William O. LaMotte, Jr., M.D., Wilmington, Del., has been reappointed a member of the Council on Legislative Activities of the American Medical Association; H. Thomas McGuire, M.D., New Castle, Del., has been reappointed a member of the Council on Mental Health of the American Medical Association; Alexander Cordova, M.D., addressed a luncheon group at the Alice P. Smyth Center, YWCA, Newark, on defective hearing, corrective shoes, vaccines, etc., for children; John M. Levinson, M.D., spoke on "The Forgotten War in Vietnam" at a meeting of the Delaware Association of Medical Assistants, Memorial Division, Wilmington Medical Center.

Primary Physician Fellowships

In response to the recommendations of the Millis Commission on Graduate Medical Education, Temple University Health Sciences Center has established the country's first fellowship training program in primary care. Dr. Arthur D. Nelson, Executive Director of Temple University Hospital states, "While it is expected that the period of training will be three years for those entering immediately after graduation from medical school, we are offering a specially structured program for physicians in or out of practice which will enable them to develop their skills as primary physicians. For such individuals, we expect to determine by comprehensive examination their qualifications to serve as primary physicians without reference to the length of time spent in the program. The fellowship program is an effort to train the new specialized family doctor."

Amblyopia Test Card

A simple hand card test may soon enable parents to visually screen preschool children in their own homes to determine early cases of amblyopia. The card, called the modified Sjogren hand card, has been developed to test three, four and five-year-old children. It shows a small picture of a hand and is held by the parent in six distinct positions in differing sequences to insure effective results. The child is asked to point his hand in the same direction as the hand pictured on the card at a distance of three feet, and again at twelve feet, using both eyes and then each eye separately. If he cannot identify the correct direction in at least four of six positions, an ophthalmological examination would then be recommended. Scores are to be recorded on a special post card and mailed to the psysician. *American Academy of Pediatrics.*

The Month in Washington

A special report from HEW states that both hospital charges and physician's fees increased sharply last year. Drugs were not a significant factor in the health care price rise.

Physician's fees, which had been rising about three percent per year in 1960-65, went up to 7.8 percent in 1966—the biggest annual increase since 1927.

Hospital daily charges, rising about 6 percent a year between 1960-65, went up 16.5 percent in 1966—the largest annual increase in 18 years. The increase in doctor fees was attributed to more people seeking doctor's services and the study found no evidence that Medicare was a major factor in the rise. The increase in hospital charges was attributed largely to rising wages (which accounts for two-thirds of the increase) and increases in the price of things that hospitals buy. The HEW report recommended a series of actions such as: Comprehensive community health care systems, group practice, (especially prepaid group practice), private and public health insurance plans broadened to include more alternative types of medical care, the FDA to provide doctors with authoritative information of the efficacy and side effects of all drugs.

The Heart Bill (S260)

The AMA contends there is not sufficient justification for a federal law that would ban dispensing of drugs and devices, such as eyeglasses, by physicians. The legislation (Hart bill) appeared to stand little chance of being approved by Congress, at least this year.

The AMA believes that "federal legislation cannot be justified unless there is a compelling need," Dr. Appel testified, and added, "In this case, such a need does not exist. Organized medicine believes—and the medical practice laws of the states confirm—that dispensing drugs and devices is a privilege granted to physicians in order that they may best serve the public interest."

Book Review

Your Ulcer: Prevention, Control, Cure, by G. S. Serino, M.D., received the following comments in the Jan.-Feb., 1967, issue of *World Medical Journal:*

> "Dr. Serino has the best of all qualifications for writing a book about peptic ulcer, quite apart from his professional interest, for he has cured his own. His account is excellent, but need he have given so much space to all the complications? Ulcer patients of nervous disposition will hardly enjoy reading all about perforation and haemorrhage, though they will welcome the reassurance about cancer. On the whole, however, this is a nice cheerful book even if it seems too detailed."

What Price Radiation?

Americans received an average annual radiation dose of 55 millirads to their reproductive organs as a result of exposure in medical diagnostic examinations in 1964, according to a PHS study. The figure was described as giving no cause for alarm by the chief radiologist at Johns Hopkins University—Chairman of the Surgeon General's National Advisory Committee on Radiation. It was pointed out that Americans now receive an average of twice as many x-ray examinations in a year as do residents of most European countries; that medical diagnostic radiation accounts for only about half as much absorbed dose as the 120 millirads of natural background radiation received annually in this country.

Diagnostic x-ray studies broken down are as follows: Half of all are for chest examinations—contributing four millirads of genetic exposure; the colon accounted for 10 millirads; the lumbar or lower spine—10 millirads; intravenous pyelograms—seven millirads; views of the pelvis—four millirads; studies of the upper gastrointestinal system—three millirads. All other examinations including the head, neck, arms and legs accounted for 17 millirads of the annual total of 55.

Exposure to men accounted for 44 millirads, exposures to women 10 millirads, and unborn children—one millirad. This figure correlates with estimates derived earlier that men receive more x-ray studies than do women during their early adult years. The physician's concern must be to limit the amount of man-made radiation added to the population genetic burden.

Reconstructive Plastic Surgery

The secret of successful survival of skin and organ transplants in man may lie in massive dosing of the recipient with material derived from certain strains of heat-killed streptococci and staphylococci according to a research report from the New York University Medical Center. Massive doses of these antigens, given before transplantation attempts, to everwhelm the recipient's inborn reaction to foreign tissue, may prevent the normal rejection of the transplanted material or organ without altering the remainder of the body's resistence to disease organisms. Present techniques of neutralizing the body's ability to reject transplanted material have frequently resulted in the death of the recipient because of overwhelming infection. The John A. Hartford Foundation, Inc., has been providing the grants to the Center's Institute of Reconstructive Plastic Surgery.

Brief Briefs

• Death from cancer is an increasing hazard to middle-aged men in most of the western world and in Japan. This trend among middle-aged men reflects the increase in the death rate from cancer of the lung and bronchus. Another general feature of the trend in mortality from cancer has been the decline in the death rate from cancer of the stomach. Currently, about seven percent of all cancer deaths at age 35 and older are reported to be from cancer of the stomach, in contrast to 12 percent in 1950.

• Expectation of life and mortality in the U.S.A. as listed by the National Center for Health Statistics, is ranked by state according to the expectation of life at birth for white males: the three states at the top of the list are North Dakota, Nebraska and Kansas, with life expectation 69.2 years. The two lowest are District of Columbia and Nevada with 64.6 as the life expectation at birth. Delaware ranks in the rest of the group about in the middle.

• Flu visits for November, 1966, equalled 54 percent of the average month—a slight increase over the October level. Indications point to a mild flu season this year. (National Disease and Therapeutic Index)

Clinical Center Studies

STUDIES OF SIDEROACHRESTIC ANEMIA AND ANEMIA DUE TO CHRONIC LEAD POISONING

The cooperation of physicians is requested in the referral of patients for two studies being conducted by the Metabolism Branch of the National Cancer Institute at Bethesda, Maryland.

1. Patients with either hereditary or acquired sideroachrestic anemia for iron turnover studies and, in the acquired cases, for therapeutic trials.
2. Patients with anemia due to chronic lead poisoning for iron turnover studies, and chelations therapy. Of particular interest are adolescents and adults who are ambulatory. Suitable patients will be admitted to the clinical center for a minimum of 4 weeks. Interested physicians may write to: Paul D. Berk, M.D., Clinical Center, Room 4-N-117, NIH, Bethesda, Md., 20014.

Congress Calendar 1967

The Vienna Academy of Medicine presents its Regional and World-wide Congress Calendar for 1967. The Congress will gladly mail detailed preliminary programs of the respective Congresses to those interested.

Apr. 14-15, 11th Conference of the German Study Group for Blood Clotting Research.
May 7-13, World Congress of Motoring Medicine.
May 26-27, 10th Annual Conference of the Austrian Ophthalmological Society.
Jun. 3-17, 11th Congress Cruise: "Blood Flow and Blood Clotting Disturbances". Route: Kiel - Leningrad (Moscow) - Aaland - Stockholm - Copenhagen - Oslo - Leigh (Edingburgh) - Amsterdam.
Jun. 26-Jul. 1, 5th International Congress of Chemotherapy.
Jul. 3-5, European Cancer Meeting.
Sep. 1-2, International Symposium on Adhesives in Surgery.
Sep. 4-9, 22nd Congress of the Société Internationale de Chirurgie.
Sep. 6-9, Congress of the International Cardiovascular Society.
Sep. 18-21, 8th International Colloquium on Vectorcardiography.
Sep. 19-Oct. 4, 3rd Study Tour to Eastern Europe: "Infections and their Treatments, with special Reference to the Eastern European Scene" Route: Vienna - Budapest - Belgrade - Giurgiu - Ismail - Odessa - Yalta - Sotchi - Batum -Sukhumi - Leningrad (Moscow) - Vienna.
Oct. 12, Annual Meeting, of the Study Group on Paediatric Radiology.

Auxiliary Affairs

PROFILE OF THE PRESIDENT

KENT COUNTY AUXILIARY

Shirley Leitzinger, daughter of Mr. and Mrs. A. H. Paulhamus, was born and raised in Williamsport, Pennsylvania. She graduated from the Temple University School of Nursing in 1951, as Vice-President of her senior class. She was married in 1953, at which time, her husband was attending Temple University School of Medicine. From her graduation until 1954 she served as a nurse at Temple University Hospital. At this time she retired from her position as floor supervisor to begin raising her family of five children. The Leitzinger's resided in Philadelphia until 1958, while Dr. Leitzinger completed his training in pediatrics. They resided in Clearfield, Pennsylvania before moving to Dover, Delaware in 1963. While in Clearfield, she was a member of the Clearfield County Women's Medical Auxiliary.

Since coming to Dover, Mrs. Leitzinger served as Kent County Health Careers Chairman before becoming President of the Women's Auxiliary in 1966. She has been an active member of the Junior Board to the Kent General Hospital, has worked for the Easter Seal Society, Heart Fund, and the Cancer Society.

The Leitzinger's have a very active household with five children, Virginia, age 12, Deborah, age 11, William, age 10, Barbara, age 9, and Andrew, age 6 years. Mrs. Leitzinger's hobbies include oil painting, golf, and gardening. The family's major recreational activity is boating, and much of their free time in summer is spent swimming, water skiing, fishing, clamming, crabbing, and exploring the waters of Delaware, Rehoboth, and Chesapeake Bays. They someday hope to cruise from Delaware to Texas via the Inland Waterway.

Mrs. William A. E. Leitzinger, Jr.

A PREVIEW OF THE 1966 AUXILIARY CONVENTION

Mary Calderone, M.D., noted proponent of sex education, will be one of the speakers at the 44th Annual Convention of the Woman's Auxiliary to the AMA, June 18-22, in Atlantic City. Convention headquarters will be the Shelburne Hotel.

Also speaking on Tuesday will be Charles L. Hudson, M.D., AMA President. Dr. Hudson's talk will be made at the luncheon honoring Auxiliary past presidents and AMA officers and trustees. The Auxiliary's contribution to AMA-ERF will be presented at that time, as well as awards to county and state AMA-ERF winners.

Mrs. Yaguda and Mrs. Karl F. Ritter, Lima, Ohio, president -elect, will be honored at a reception Sunday, June 18. Mrs. Ritter will be installed as president Wednesday, June 21.

Other convention highlights will be the Monday Guest Day Luncheon (speaker to be announced) and "The Little Workshop," a question-and-answer session on Auxiliary programs, with the National Committee chairmen leading the discussions.

The Auxiliary will also sponsor a teen age program for children of physicians and guests attending AMA convention, held concurrently with the Auxiliary meeting.

Delaware Medical Journal

APRIL, 1967
VOLUME 39
NUMBER 4

INGUINAL HERNIAS AND HYDROCELES IN INFANTS AND CHILDREN

• Inguinal swellings in the young are of frequent occurrence and are often puzzling. A full discussion of the problem and its management is presented.

Charles L. Minor, M.D.

Inguinal hernias are true congenital anomalies and not acquired lesions in children. Although coughing and other stresses may seem to be related to the appearance of a hernia, this is only coincidental because the persistent sac has been there since birth.

In males and females there is an outpocketing of the peritoneum, called the processus vaginalis, which extends into the scrotum of the male and the labium majus of the female. In the male this plays an important part in the descent of the testis, and after the gonad has reached its normal position at the bottom of the scrotum, the tip of the processus seals off as the tunica vaginalis testis while the remainder is obliterated. If this fails to occur prior to birth, the sac persists and may present as a hernia at any age. In females, since nothing has to pass down through the inguinal canal, the processus is more readily obliterated and fewer hernias are noted. This entire happening occurs fairly late in the course of intrauterine development, because hernias are significantly more frequent in those born prematurely. It is important to remember this course of events, because the inguinal bulge which appears in a little girl is so often interpreted as being some other ailment; whereas the majority of them are in fact inguinal hernias.

It is not known why hernias make their presence known at such variable ages in children, but despite this, it is important to realize that if a sac is present, it will persist until it is surgically excised and will be a constant source of danger to the patient. Since it is an outpocketing of the peritoneum, any mobile abdominal organ may slip into it at any time. This frequently occurs repeatedly with no obvious sign or symptom of difficulty, but there is a great propensity for enough edema to arise in the region of the narrow internal inguinal ring to trap the contents—an incarcerated hernia. If the incarceration persists for long enough (occasionally only a few hours, sometimes more than a day), the blood supply to the contained viscus becomes impaired and strangulation occurs. This chain of circumstances seems to happen more frequently in males, because females so commonly have fall-

---

Dr. Minor is Associate in Pediatric Surgery, Wilmington Medical Center, and Medical School of the University of Pennsylvania; Associate Surgeon, Children's Hospital of Philadelphia.

opian tube, ovary or even the uterus slide into the hernia, and they seem to tolerate this position better than does a loop of intestine. It is worth mention that a significant number of hernias in infants under one year of age appear first as incarcerated hernias. This situation is peculiarly dangerous, because the parents, having no previous knowledge of the condition, seem to be prone to wait an inordinate length of time before seeking professional help.

One of the more difficult problems in differential diagnosis is posed by the high inguinal mass. This may represent an incarcerated hernia or a hydrocele of the cord. A more complete discussion of hydroceles will follow, but it is important enough to discuss at this point. If the cord structures can be readily palpated above the mass with no sign of any other organ, one may rest assured that it is a hydrocele. But occasionally the mass lies high enough that this maneuver is impossible. If the mass has been present for several days without attendant discomfort or gastro-intestinal symptoms, one may feel quite confident that it is not an incarcerated hernia. Where neither of these apply and where attempts to reduce the mass fail, operation is necessary in order certainly to avoid strangulation.

Diagnosis

Most hernias present as swellings in the inguinal area which come and go without significant symptoms. Many infants become much more fussy and some older boys have a surprising amount of local discomfort when the persistent sac has been opened enough to admit omentum, intestine or some other organ. In others, very large hernial protrusions occur with no complaints whatever. In children with a presenting mass or a reliable history the diagnosis is easy to establish. In others a hydrocele may give the diagnosis. In some it is very difficult to be sure because the history may not be clear, and it is interesting to note how many parents are not sure on which side a bulge appeared. In this event one must rely upon the physical examination. The findings are almost always far easier to elicit in boys than in girls because of the presence of the testis and the cord structures.

Examination

Whenever examining a child for this or related conditions, it is essential to be calm and gentle and to have warm hands. With the child lying comfortably on the examining table the lower abdominal wall and genitalia are carefully palpated noting any difference between the sides. Not infrequently, a small mass of herniated bowel, fallopian tube or ovary can be detected, which with heavier pressure will be reduced. At this time a number of hydroceles of the cord may also be palpated. If nothing is noted, firm but gentle pressure applied over the symphysis pubis with the fingers of the examining hand parallel to the vas and vessels may demonstrate the classical findings of the silk glove sign as the hand is moved back and forth laterally. Any thickening in the area is very suspicious, but the feeling of two smooth serous surfaces (the opposing walls of the hernia sac) slipping over each other is diagnostic if it fits with the history. Particularly over the age of three the isolated finding of a silk glove sign is not definite evidence of the presence of a hernia, though it may well be the reason for careful observation at intervals to be sure.

Some thickening of the vas deferens in the upper pole of the scrotum may be a helpful suggestive finding if it fits the story. Invagination of the scrotum, as is done in examining adults, is of no help in children because the size of the inguinal ring seems to bear little or no relation to the presence of a hernia and especially because it may be very uncomfortable for the child and may make the remainder of the examination impossible to complete. I suspect that few if any pediatric surgeons use this method of examination. Another helpful maneuver is to have the child jump up and down on the floor or to bounce him up and down yourself. Not infrequently this will cause the bulge to appear where the hernia lies.

It is difficult to be sure whether there is a contralateral hernia much of the time. There are those who feel that below the age of one or two or even six years, bilateral exploration should be carried out, because they have found that 60% of children have two when only one hernia may have presented initially. In very young infants or those who were premature at birth, this may be appropiate, but I have been reluctant to do this unless there is some good indication of a second hernia. My reasoning has been that if the statistics are correct, one will be exploring four sides in every ten patients where no hernia lies. When the surgeon is operating, he does as careful an exploration as possible to be certain there is or is not a sac. In the course of the dissection, which is more difficult and tedious when no sac is present, there is a distinct chance of injuring the cord structures. It has been found that about 85% of boys who present with a left hernia have one on the right also. For this reason one always examines the child very carefully in an effort to detect the other one. Even if the examination does not clarify the picture, I have found it extremely helpful to examine the left hernia sac at operation. If it is significantly thickened, I have never failed to find a sac on the right — often just as large and just as thick, but for some reason not palpable.

By following this method of examination one can establish the diagnosis of hernia quite well. An occasional child who presented with one hernia and had nothing to suggest a concontralateral one on examination or under anesthesia at the time of operation, will return at a later date with a classical bulge on the other side. Although this causes some chagrin and annoyance, I believe it is safer to deal with them in this way.

Hydroceles

Hydroceles are of two types: hydroceles of the cord and hydroceles of the tunica vaginalis testis. The differentiation is sometimes difficult. But beyond the age of six months either type signifies that an inguinal hernia also exists, although it may not have become apparent. A hydrocele of the cord is actually a hernia sac in which fluid has been trapped. If the testis can be palpated as a discrete mass below the swelling under examination, it is probably a hydrocele of the cord. Some are easily compressible with the fluid returning to the peritoneal cavity whence it came (a communicating hydrocele), and in such cases it is easy to demonstrate the reason for concern to the family. This is not always true, but it should make it no harder for us to reach the proper decision. A collection of fluid within the tunica vaginalis testis may be present at birth, having been trapped there when the normal process of development was taking place. In this event the liquid is gradually absorbed over a period of four to six months, and there is no necessity for concern that a hernia may be there. This is known as a physiologic hydrocele. If the hydrocele, which lies lower than that of the cord and in which the testis is hard to define because it is surrounded by fluid, appears after birth and increases in size, it usually signifies that a hernial sac is present. Such a sac may be very narrow and sometimes is demonstrable only on microsocopical section. Because of these facts, I suggest operation in any infant who has a hydrocele of the cord, but in the infant who has small to moderate-sized hydroceles of the tunica vaginalis, I will defer decision until he is about six months of age. Larger hydroceles, particularly those which are enlarging, require earlier surgical intervention because the patient processus vaginalis may become the site of herniation at any time.

Treatment

Once the diagnosis of hernia has been established, the appropriate treatment is operation as soon as is convenient. Many physicians are reluctant to have this done in a small infant, but where good, safe anesthesia is available, it is far wiser to proceed with an elective undertaking in an otherwise healthy patient than it is to wait until necessity may force operation as an emergency when the child may have some other illness. Generally it is felt wise to wait until a tiny infant has gained up to a weight of ten pounds, but otherwise there are no limitations. Where a course of unnecessary delay is followed, a significant number of children will require emergency surgery because of incarceration or strangulation, and the morbidity and indeed the mortality following operation may become very much greater.

The operative procedure is usually carried out under general inhalation anesthesia. Although some surgeons have found local anesthesia satisfactory, this would seem to be a good deal more difficult in some ways. If the infant strains when the hernia sac is open and bowel extrudes, it may be very difficult to return it to the peritoneal cavity without an undue amount of trauma. The incision is made in the skin crease because wide exposure is nearly never necessary and the cosmetic result is so much better. The hernia sac is excised completely, and where a hydrocele of the cord is present, it is removed as well. If there is a hydrocele of the tunica vaginalis testis, I try to excise a majority of the sac if this is easily possible. It is important, however, not to carry out too extensive a dissection in order to achieve this and by so doing injure the cord structures or the testis. Once the hernia sac has been excised, the hydrocele will gradually shrink and disappear. Closure is achieved by reapproximating the layers with no complicated type of muscular repair since in children this is almost never necessary. The excision of the persistent sac cures the hernia. Skin approximation is done with subcuticular sutures thus obviating the need for dressings and for suture removal. A dressing of flexible collodion completes the procedure. After one post-operative night in hospital, the infant or child can return to full activity with no limitations.

Incarcerated Hernias

One important consideration in the management of this problem is the care of the child with an incarcerated hernia. When this has occurred the patient almost always becomes very fussy or complains of a good deal of discomfort, and as soon as the mass is noted, medical help is sought. If this is permitted to go on for long enough, abdominal distention and vomiting will ensue. It is hard to be sure how long incarceration can persist before the limit of safety. Very rarely, when a child is seriously ill with another sickness, it may still be appropriate to try to reduce the hernia rather than undertake operation under less than optimal conditions. I have had occasion to do this in two patients who had had irreducible hernial masses for twenty-four hours, but had severe upper respiratory infections. In each instance the bowel functioned normally, and elective repair was carried out later with a good result. Such a child obviously must be watched very closely for any sign of injury to the intestine following such a maneuver.

In the usual instance the question is not so pressing and every attempt is made to reduce the incarcerated hernia and to avoid emergency surgery. Edema about the sac's contents cause them to become stuck in their position, and definitive repair of such a hernia is difficult if not impossible because the sac is so friable. The ideal is to reduce the hernia and then repair it electively as soon as the local edema and reaction have subsided — one to as many as seven days later. One would suppose that the amount of local edema would tend to prevent recurrence of incarceration, but such is not the case; and many a hernia which has been reduced only with great difficulty has gone on to repeated episodes of incarceration until repair has been effected, For this very reason, any child who has had reduction of an incarcerated hernia should be hospitalized for close observation until the operation has been done.

When faced with an infant or child with this condition, the first part of reduction is to relax the patient as much as possible, using a bottle for an infant particularly. Gentle pressure about the neck of the sac can then be used to milk the edema fluid away from the area, and firm alterating pressure on the mass for a period no longer than thirty seconds at a time will usually begin the process of reduction. One must be certain that all of the contents of the sac have been reduced. This is best done by feeling the mass pop into the peritoneal cavity and then palpating the cord structures just outside the external inguinal ring. If there is any question about complete reduction, it is safer to carry out operation then than risk damage to a trapped knuckle of intestine.

If the initial attempts at reduction fail it will then be appropriate to sedate an older child, to place the patient in Trendelenburg position and to apply an ice pack over the mass. After an hour of quiet rest in this position, it is nearly always possible to reduce the hernia; but if this is not so, it probably is wiser to operate upon the patient than to try repeated similar measures. Successful reduction of an incarcerated hernia is usually followed by complete relaxation of the child as the pain stops, with the youngster dropping off to sleep quite promptly. Despite this happy resolution, it is important to bear in mind the fact that the child needs surgical cure promptly, and the safest thing is to admit him to the hospital immediately, and have an operation performed as soon as practicable.

Complications of Operation

Following the plan of treatment suggested here, there is usually a smooth post-operative recovery without problems. With careful attention to skin preparation, particularly thorough washing with pHisoHex on the night prior to operation, the incidence of wound infection is very low. Should it occur, it is almost always superficial and does not cause recurrence of the hernia. Many infections will persist until all of the foreign suture material introduced at the procedure has been removed or spit out. For this reason, it is helpful to probe gently the infected wound with a sterile hemostat to discover and remove any of the fine knots of silk or cotton which may have been used in closure. The organisms seem to reside within the twists of the material and may serve as a focus of recurrent difficulty until they have been displaced. Rarely a child is seen who seems to respond to the presence of any foreign matter by rejecting it with no obvious evidence of infection. In one instance, I saw an infant who did this until fourteen months after herniorrhaphy the last suture was removed.

Despite all our care in watching closely for signs of other illnesses and despite hospitalization for the night before operation, some children with incipient colds or other infections will not be detected until after they have been subjected to inhalation anesthesia. The agents which are used now are less irritating, but particularly if endotracheal intubation has been used, there may be some post-operative croupiness. It is seldom serious enough to require any but supportive measures, especially high humidity, and I have never seen tracheostomy required for its relief.

Recurrence

The care of hernias advocated here is usually completely satisfactory and followed by no post-operative problem. There is, however, a very low incidence of recurrence; in the range of two or three per 1000. The difference between this and the usual figure of 10-15 per 100 for hernia repair in adults is obvious. In most instances the recurrence appears when an inadvertent tear is made in the peritoneum near the internal inguinal ring as the sac is being freed or ligated. If such an opening is created and not repaired then, fluid will seep out of the peritoneal cavity and will gradually be surrounded by a thin new sac, duplicating the hernia which was excised. This will require another, sometimes much more difficult, operative procedure. In children, however, one is seldom faced with the difficult problems found so often in adults with direct hernias and associated muscle or fascial attenuation and weakness. There is a very low incidence of direct herniation in the childhood group, and those which are found generally respond well to standard operative procedures such as the Bassini repair.

Summary

1. Inguinal hernias in infants and children are congenital anomalies and require surgical excision for cure.

2. The differentiation and significance of hydroceles is discussed.

3. The management of the incarcerated hernia is described.

4. Complications and recurrences are discussed briefly, although they are infrequent.

5. A short hospitalization with appropriate operation is curative.

REFERENCES

1. Gross, R. E.: The Surgery of Infancy and Childhood, W. B. Saunders Company, Philadelphia 1953.
2. Kiesewetter, W. B. and Parenzan, L.: When Should Hernia in the infant Be Treated Bilaterally? J.A.M.A., 171, 127, 1959.
3. Santulli, T. V., and Shaw, A.: Inguinal Hernia: Infancy and Childhood, J.A.M.A. *176,* 110, 1961.

RECENT ANIMAL CONTRIBUTIONS TO THE STUDY OF SALICYLATE OTOTOXICITY

• Aspirin, one of the most widely used of the common drugs, is known to produce hearing loss when taken in therapeutic doses. Recent animal experimentation seeks to elucidate the nature of the auditory effects of salicylism.

Chester Wilpizeski, Ph.D.
Yoshisato Tanaka, M.D.

Serious, permanent hearing deficits arising from continued use of some Streptomyces antibiotics are well known to the practicing otologist. There are, however, other classes of drugs, namely salicylates and quinine derivatives, whose otoxic effects are relatively mild and transient. Nevertheless, the mechanism and site of temporary deafness caused by the latter classes of drugs are perhaps less well understood than are those associated with permanent losses. From a clinical standpoint, the need for recognition and eventual control of any deleterious side effects of pharmaceuticals is obvious.

Contemporary Experimental Work

Although hearing loss following ingestion of large quantities of aspirin has been recognized for many years, well-controlled experimental studies of salicylate ototoxicity have been made only recently. During 1965, several investigators reported quantitative audiologic findings from human subjects given cumulated therapeutic doses of aspirin.[1,2,3] A definite high tone deafness amounting to as much as 40 decibels is apparent within 48 to 72 hours after beginning a dose schedule of fifteen 5-gr tablets per day. There is some disagreement, however, as to whether or not pronounced low-tone loss occurs with salicylism.

Animal studies using squirrel monkeys,[2] cats and guinea pigs[4] confirmed the fact that systemically administered salicylates cause temporary hearing threshold elevations. The present paper is a synopsis of our past two years' work on this phenomenon using electrophysiological and behavioral techniques with experimental animals.

Electrical Potentials Evoked From Auditory Nerve

Permanent indwelling recording electrodes were placed stereotaxically in the eighth nerve-cochlear nucleus region and attached to a microminiature electronic receptacle cemented to the skull. Following recovery from surgery, hearing was assessed electrophysiologically by connecting the animal to a preamplifier with a mating cable (Figure 1) and displaying the nerve response on an oscilloscope. Measurements were taken before and after intraperitoneal injection of sodium salicylate dissolved in normal saline solution.

Data showing the effect on hearing of a single 300 mg/kg dose of salicylate given to a group of guinea pigs are graphed in Figure 2. Initial changes in the threshold level of the auditory nerve response can be detected with-

---

The authors are with the Neuropsychology Laboratory, Veterans Administration Hospital, Wilmington, and the Department of Otolaryngology, Jefferson Medical College, Philadelphia.

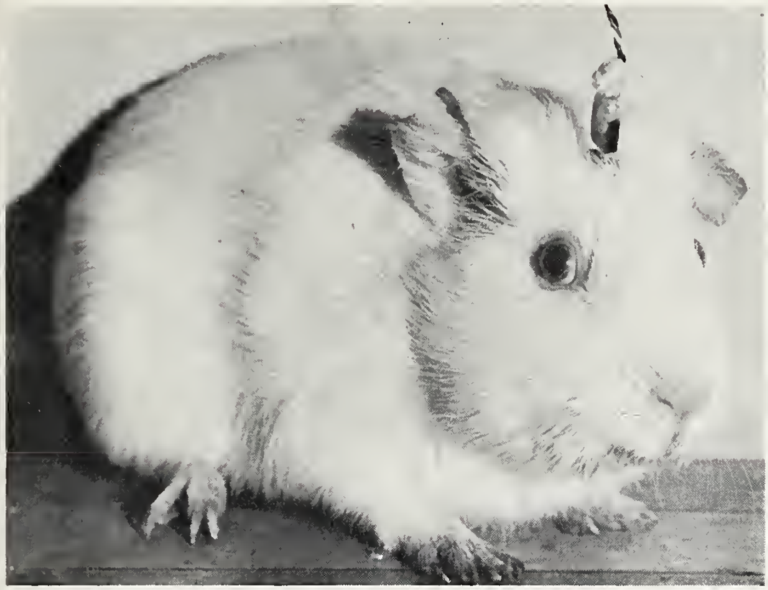


Figure 1.

Guinea pig with permanent recording electrodes placed in the peripheral auditory system. The animal is connected to an amplifier and oscilloscope by means of the lead cable. Data were collected during the waking state.

in 20 to 30 minutes following injection. The height of the effect occurs at about 2 hours and then begins to decline slowly until near-normal threshold levels are reached 24 hours later. Even with so large a dose—300 mg/kg is equivalent to nearly 65 aspirin tablets for an average (70 kg) man—threshold shift is relatively small. However, the absolute amount of hearing loss is dependent upon how and from where it is measured.

Additional animals were prepared with permanent electrodes placed on the round window membrane of the inner ear. The predominant electrical response detected from this location is generated by the receptor (hair) cells within the cochlea. As seen by the lower curve in Figure 2, salicylism produces no significant impairment in the output of the hair cells; if anything, threshold is slightly (but not significantly) better. On the basis of this response differential, it is tempting to localize the mechanism of salicylate ototoxicity in the auditory nerve rather than in the receptor cells. This conclusion, however, is not warranted.

A group of cats with permanently implanted electrodes was utilized to measure the amplitude of the auditory nerve response as a function of sound intensity. Averaged input-output curves in Figure 3 show that salicylate depresses the strength of the nerve response at low sound intensities. At sound intensities greater than 30 decibels above normal threshold, auditory nerve output is essentially normal. This rapid rise in amplitude near threshold is suggestive of loudness recruitment observed by humans with deafness of known intracochlear origin. Based on electrophysiological evidence, salicylate ototoxicity cannot be attributed to hair cell malfunction even though other findings point to an intracochlear site. Because the junction between hair cells and auditory nerve fibers is intracochlear, the synaptic region itself might reasonably be proposed as the locus of impairment. Obviously, much more work, especially of a histochemical nature, must be done before answers to this question can be provided.

Behavioral Tests of Auditory Function

Within recent years, electrophysiological measures have been questioned as accurate assessments of auditory sensitivity. Behaviorally conditional responses of animals are probably more analogous to human perceptual reports. Further data on salicylate ototoxicity were obtained from animals trained to avoid electric shock punishment by pressing a lever whenever a warning noise occurred. Conditioned response thresholds were defined by the faintest sound to which the animal would consistently respond.

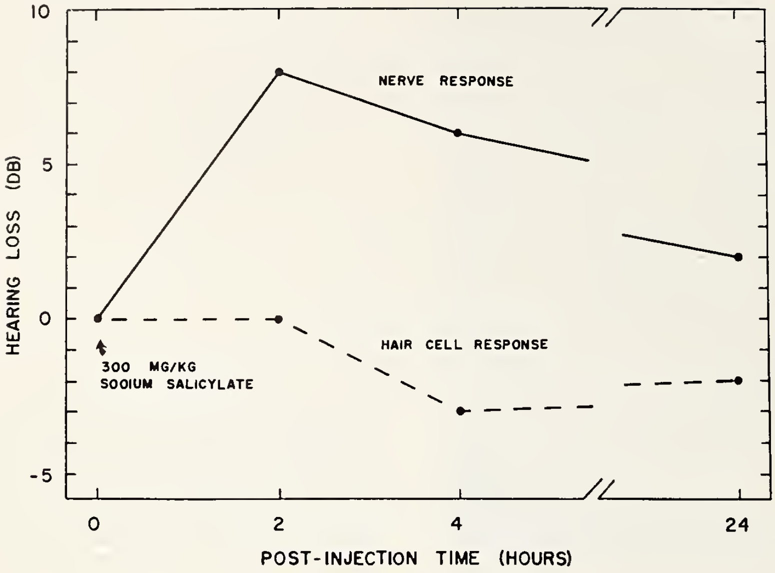


Figure 2.

Averaged guinea pig auditory thresholds as measured by evoked electrical potentials. Nerve responses were obtained from electrodes placed in the eighth nerve-cochlear nucleus region. Hair cell responses were detected from within the cochlea by means of electrodes placed on the round window membrane. Stimuli were 1 per second clicks produced by a pulse generator.

Figure 4 is a dose-responsive curve obtained from a group of conditioned guinea pigs. On the basis of eighth nerve evoked potentials, hearing losses could not be demonstrated below doses of 300 mg/kg. On the other hand, with the behavorial measurements, a significant threshold shift occurs at drug levels as low as 100 mg/kg. At the highest dose given the conditioned guinea pigs (250 mg/kg) hearing loss exceeds that produced by the 300 mg/kg dose given the implanted-electrode animals.

Finally, Figure 5 shows data collected from a highly-trained cat on the frequency specifically of salicylate ototoxicity. The results lie somewhere between those reported earlier from humans.[1,3] There is less hearing loss for a low-pitched tone (250 cps) than for the other tones; on the other hand, the high-pitched tone loss (8000 cps) does not exceed the other two stimuli. In spite of the fact that little more than a trace of salicylate can usually be detected in blood serum beyond 24 hours post injection, hearing acuity often does not return to normal before 48 to 72 hours. This phenomenon, which we have termed "auditory hangover," currently is under continued investigation in this laboratory.

At this stage of our knowledge, it is not clear whether behavioral assessments of hearing are inherently more sensitive measures

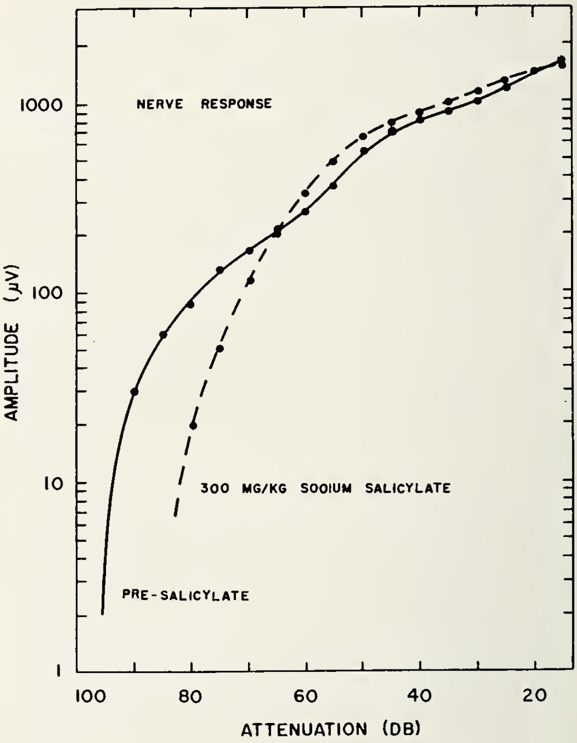


Figure 3.

Amplitude of evoked eighth nerve potential as a function of sound intensity before and 2 hours after intraperitoneal injection of 300 mg/kg sodium salicylate. Data are responses to 1 click per second averaged over a group of cats.[4]

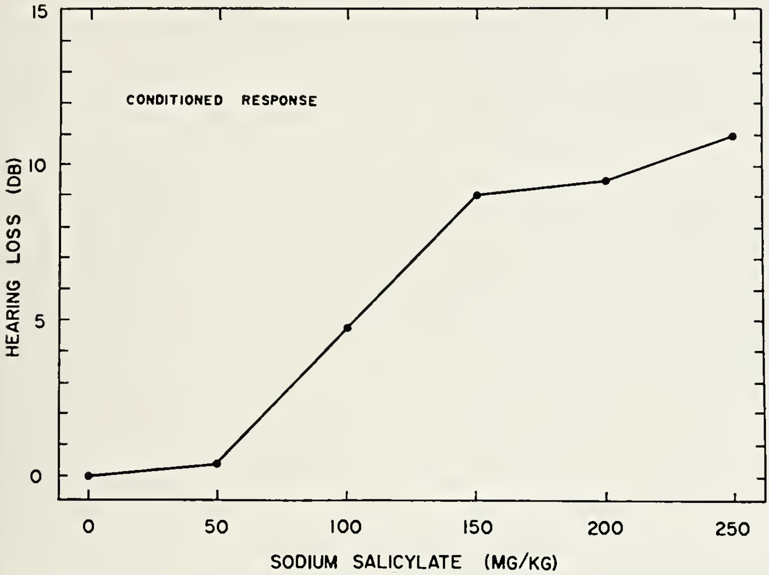


Figure 4.

Dose-response curve based on averaged hearing losses from a group of behaviorally conditioned guinea pigs. The animals were trained to respond to a white noise by pressing a lever in order to avoid electric shock punishment.

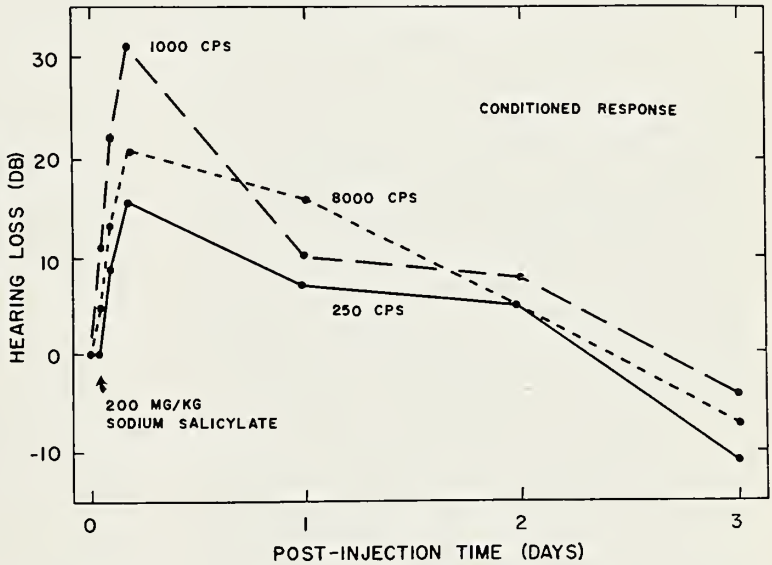


Figure 5.

Time and duration pattern of salicylate ototoxicity following injection of 200 mg/kg sodium salicylate. Data were collected from a highly trained cat conditioned to avoid electric shock by pressing a lever. Conditioned stimuli were 250, 1000 and 8000 cycles per second.

of loss than are electrophysiological indicators, or whether salicylates suppress auditory processes at higher nervous system levels than have been tapped by our electrodes. If the latter is true, then electrical responses evoked from neural areas such as auditory cortex ought to reflect decrements as large as those exhibited by behaviorally conditioned animals. We hope to extend this work in the future.

ACKNOWLEDGEMENT

The authors wish to thank Mr. Mervil Anthony, Medical Illustration Service, VA Hospital, Wilmington, for producing the illustrations. This research was supported in part by Grant NB 05082, National Institutes of Health, US Department of Health, Education, and Welfare.

REFERENCES

1. McCabe, P. A. and Dey, F. L.: The Effect of Aspirin upon Auditory Sensitivity. Ann. Otol., Rhinol., and Laryngol, 74:312-324, 1965.
2. Myers, E. N. and Bernstein, J. M.: Salicylate Ototoxicity. Arch. Otolaryngol, 82:483-493, 1965.
3. Myers, E. N., Bernstein, J. M. and Fostiropolous, G.: Salicylate Ototoxicity: A Clinical Study. New Eng. J. Med., 27:587-590, 1965.
4. Gold, A. and Wilpizeski, C. R.: Studies in Auditory Adaptation: II. Some Effects of Sodium Salicylate on Evoked Auditory Potentials in Cats. Laryngoscope, 76:674-685, 1966.

LANDRY'S ASCENDING PARALYSIS IN ACUTE INTERMITTENT PORPHYRIA

• The therapy in acute intermittent porphyria has decreased the mortality in the ascending Landry's paralysis to the extent that the mortality in cardiogenic shock has been reduced. . Insight can be gained into nerve metabolism in general, and conditioned states.

Edward S. McCabe, M.D.

The term porphobilinogen (PBG) was introduced by Waldenstrom and Vahlquist[1] to designate the Ehrlich aldehyde-reacting chromogen which Sach[2] first distinguished from urobilinogen and which characterizes the urine in cases of acute porphyria. PBG was first crystallized by Westall[3] and its monopyrolic structure was elucidated by Cookson and Rimington[4]; then Watson and Schwartz[5] in 1941 observed that the PBG aldehyde compound was insoluble in chloroform as opposed to urobilinogen. Because of the fact that a rare false positive may turn up, butanol extraction was introduced. Failure to extract with butanol reduced the likelihood of a false positive. PBG is converted to uroporphyrin. The Mauzerall and Granick[6] quantitive method for PBG is rather specific, but the reading must be done promptly, as inhibitor, i.e. thiol may be present. ALA (aminolevulinic acid) may be determined (measured) quantitatively and is helpful in determination of the carrier state.

The earlier classification of porphyria, notably by Gunther[7], was purely clinical in character. Varieties were congenital, acute and chronic. (See Table I)

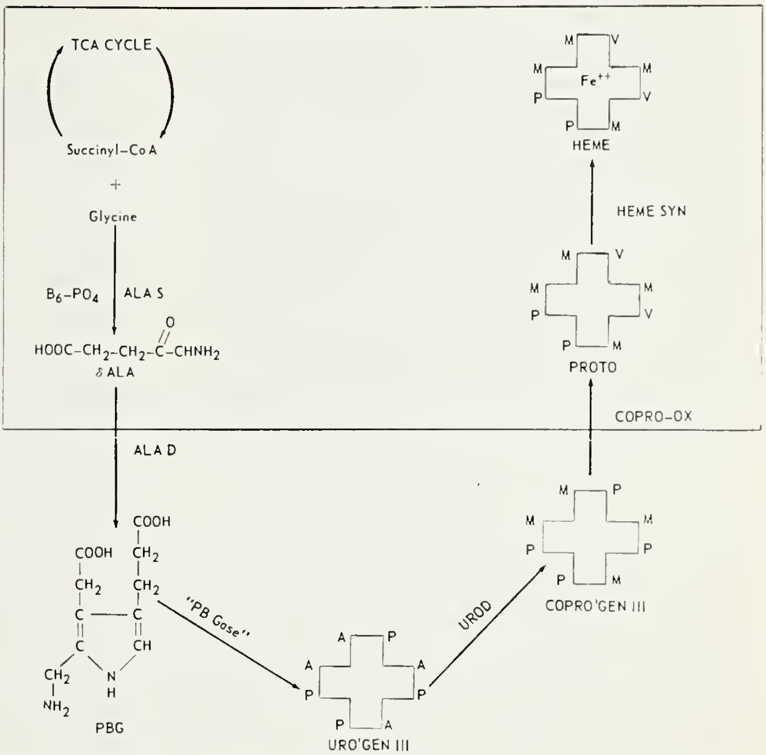
Table I.
Extended Classification of Porphyria

- I. Porphyria erythropoietica (recessive)
- II. Porphyria hepatica
  - A. Hereditary acute intermittent (dominant)
    - 1. Manifest
    - 2. Latent
  - B. Hereditary, mixed or "variegate" group (dominant)
    - 1. Cutaneous with little or no acute manifestations
    - 2. Acute intermittent without cutaneous symptoms
    - 3. Various combinations
    - 4. Latent
  - C. Hereditary cutaneous
  - D. Constitutional or idiosyncratic (porphyria cutanea tarda)
    - 1. Chemicals, especially alcohol
    - 2. Idiopathic
    - 3. With systemic disease
  - E. Acquired
    - 1. Secondary to hepatoma
    - 2. Secondary to fungicide — Turkish epidemic

Since the congenital type is basically erythropoietic and the others hepatic in origin, the term porphyria cutanea tarda is synonymous with chronic. Photosensitivity and peripheral neuropathy, also liver damage are consistent features. Acute intermittent porphyria is more common in females, and chronic in males. The Swedish form seems to be the more pure form and in remission PBG may completely disappear from the urine. In the South African variety, the fecal

---

Dr. McCabe is Medical Consultant, Medical Outpatient Department, Philadelphia General Hospital.



CHART

Compiled by Dr. D. Shemin who has made an outstanding contribution to the study of porphyrin biosynthesis.

excretion may be increased in remission. Both acute and chronic forms may be characterized by the urinary excretion of delta-aminolevulinic acid, porphobilinogen and Waldenstroms uroporphyrin on qualitative testing and excretion of increased amounts of proto-copro-porphyrin, type 3.

Acute intermittent porphyria clinically is characterized by abdominal pain, obstipation, hypertension, neuropathy and psychiatric disturbances. Thus any unexplained abdominal pain in a woman should suggest that a Watson-Schwartz test be done, especially after barbiturate, glycine or other provocative agent has been given. Sulfonamides, anti-ovulation agents, anti-fungicidal agents and heavy metals are additional precipitating drugs. In a female subject to multiple abdominal explorations, this test should be done, and in unexplained neuropathic and psychiatric states.

More recently hypotension has been found to be associated with this condition. Preponderance of parasympathetic tone because of the involvement of the visceral sympathetic system might account for the hypotension and most of the abdominal complaints. Neurologic disorders such as tabes, hematomyelia, syringomyelia, even parasellar tumors and cranio-pharyngioma, are often associated with hypotension. More recently the partition of norepinephrine and epinephrine between plasma and erythrocytes has shown that norepinephrine is consistently low in the erythrocytes in hypotension. This may be due to increased plasma binding from porphyrin precursors. One might raise the possibility of AIP in a patient sensitive to Ismelin.

The prevalence of AIP is approximately 2 or 3 per 100,000 persons.[8] It is inherited as an autosomal dominant, with incomplete penetrance. There is some question of sex linkage, especially since estrogens increase urinary pyrrole excretion. Some of the males reported have had a Gynecoid pelvis making the discrepancy more apparent than real when the mosaic of androgyny is considered.

Outstanding work on porphyrin biosynthesis is derived from the work of Shemin,[9] whose chart is included. Thus, glycine is conjugated with succinyl coenzyme A to form ALA catalyzed by ALA synthetase. This takes place in the mitochondria in the presence of pyridoxal phosphate. The porphyrinogens are the true intermediates in Heme synthesis and uroporphyrine is an oxidative end product. Thus, ALA synthetase is subject to feed-back inhibition by a derivative of Heme. Now evidence is accumulating that AIP may be a disorder of genetic control mechanisms, rather than a structural gene defect entirely.

The urinary excretion of an ADH-like substance has been observed in an acute attack and hypomagnesemia (level meg/L) has been observed.[10] Other findings in face of normal renal function were hyponatremia and hypotonicity along with natriuresis and hypertonicity of urine. Circulating cortisol was normal but urinary excretion was decreased. Lesions have been demonstrated in the hypothalmus i.e., supraoptic and paraventricular nuclei, also demyelination of cervical segment fasciculus gracilis tract, vagus, and optic nerve.[11] Previous failure to demonstrate pathology may be due to the time interval needed for retrograde degeneration.

Case Reports

Within a year, two cases were seen at the Philadelphia General Hospital. One was a thirty year old white professional woman, and the other a twenty-six year old Negro domestic. The latter is reported in detail although both are quite similar.

In 1952 at the Philadelphia General Hospital, a twenty-six year old Negro woman was seen with severe dysmenorrhea and some form of peripheral neuropathy. Her complaints were definite, but seemed to be tolerated as she was a somewhat phlegmatic individual. In 1953 she suffered an exacerbation which was thought to be an ectopic pregnancy and a colostomy was contemplated but held off because of the change in location of pain. Following this, weakness developed in the legs and extended to the arms. She was transferred to the Psychiatric Service and she became somewhat delusional and confused. Neurological examination at this time confirmed the diagnosis of polyradiculoneuropathy. A Watson-Schwartz Test was done but was reported as negative and the patient was placed on barbiturates, and when a second medical consultation was obtained, the second Watson-Schwartz Test was positive. A quantitative 24-hour urine porphyrin determination showed 10 mg and this increased to 27 mg at the height of the paralysis i.e., quadraplegia. The patient was treated with BAL, 3.5mg per kilo per day for approximately 7 days. This was followed by 1,000 Gamma of B-12 daily. Improvement was noted starting about the third day. In addition, adrenal cortical replacement therapy was given in the form of the Upjohn Lipo-Extract, 1cc every 12 hours. The patient gradually recovered full control of her extremities with the exception of some weakness in the left wrist.

Demerol and Etamon seemed best in controlling abdominal pain. In remission quantitative urinary coproporphyrin was 2,000 Gamma 24 hours; and uroporphyrin 6,800 Gamma per 24 hours. Over the years she continued to have trouble at the time of her period, and the question was dysmenorrhea per se or exacerbation of the systemic condition. An anovulatory cycle was thought best and this was attempted by combining estradiol, progesterone therapy but was not too helpful. One consultant went as far as to suggest hysterectomy. Finally a combination of Thorazine, 25mg at bedtime daily and Benadryl, 50mg twice a day starting a day or two before the menstrual period was hit on as the best combination to hold the patient in remission. She has been followed close to 12 years now in the Out-Patient Department, and she still has one of the highest titers of porphobilinogens that has been seen at this hospital.

Recently, in view of some new work, a quantitative coproporphyrin and uroporphyrin was done through the courtesy of Dr. Sunderman, and the patient was found to be excreting 220 micrograms of coproporphyrin over 24 hours and 75 micrograms of uroporphyrin over 24 hours with a very strongly positive porphobilinogen determination.

In the Lancet, Gajdos[12] when using adenosine 5 monophosphate in 250mg a day dosage, was able to get a symptomatic remission and a complete disappearance of uroporphyrin in the urine in the patient. We were able to obtain this from the Ames Company in Elkhart, Indiana, (the 5AMP 100mgm/cc). The patient was started on 100 milligrams twice a day and at the end of ten days a quantitative determination was performed which showed that the porphobilinogen was now less strongly positive. Coproporphyrin was now 230 micrograms per 24 hours and the uroporphyrin had gone up to 570 micrograms in 24 hours. Unfortunately, the resident had discontinued the Thorazine and the Benadryl so that it was not known whether this meant a conversion from porphobilinogen to uroporphyrin naturally occurring or that the medicine was doing this. The dose was increased to 300mgms per day of adenosine 5 monophosphate. This was tolerated very well and at the end of another ten days a repeat determination was done. This time the porphobilinogen was strongly positive again and the coproporphyrin was around 230 micrograms % with the uroporphyrin back to 75 micrograms %. Complaints during the next ten days of 300mgm per day were leg paresthesias and restlessness; these ceased after the drug had been stopped for three days. The patient was discharged on Thorazine and Benadryl and will return in three weeks for another quantitative 24-hour urine excretion.

Discussion

The mortality[13] in acute intermittent porphyria with Landry's ascending paralysis has been uniformly fatal, (98%). This has been constantly whittled away so that a reduction to 30% may be expected with judicial use of the therapeutic agents on hand[1]: Chelation technique, originally with BAL dosage, 3.5-mgm/kilo/day for first three days then reducing .5mgm every two days on the next four days;[2] Calcium Disodium Versenate 3G/-daily for four days over 8-hour periods;[3] 1,000mcg. B_{12} q 12 hr. for 10 days;[4] Intravenous ACTH 30mgm a day seems to be dramatic in an occasional case, i.e., one out of 3 or 4 and the effects will be seen within 72 hours or sooner. It should be discontinued if the patient is made worse and tapered off (5mgm less daily) if improved. Finally according to Gajdos, acute intermittent porphyria will respond to large doses of 5 AMP or adenosine 5 monophosphoric acid, 250mgm daily for seven to ten days. The congenital form does not. He agrees with the hypothesis of Talman[14] that ALA is a precursor of not only porphyrins but also the purines (adenine and guanine) so that a conditioned deficiency of purine synthesis can result. In experimental porphyria (ALA induced) adenine[12] can prevent uroporphyrin formation. Thus deficiency of the high-energy donor or phosphorylated derivatives of adenosine may inhibit certain metabolic reactions leading to accumulation of toxic intermediate or deficiency of essential metabolites.

Table II
ACUTE INTERMITTENT PORPHYRIA
Trace Metal Study
mgm/100cc
September, 1962

	PD	*GR*
Vol	1900	1600
Age	36	40
Ca	170	100
Pb	32	48
Zn	720	990
Cd	-15	-12
Mo	72	82
Sn	170	178
Co	-2	-2
Ni	52	42
Bi	3.5	-2

The increased ALA synthetase activity (seven fold over normal) could be explained then as a mutation of an operator site so that a repressor substance could no longer inhibit transcription. This would mean one allele would be unresponsive to repressor substance for constant unregulated production of enzyme (ALA synthetase) and consequently a dominant mutation. This operator constitutive mutation concept fits both biochemical and genetic data for AIP.

In a trace metal study done in remission, both zn and sn were at quite high values. If zn is complexed to uroporphyrin, one would estimate an even higher value in exacerbation. Sn (tin) may be a catalyst in nerve phospholipid formation and glycine would appear to be a better provocative agent than a barbiturate or sulfa drug.

Summary

Since AIP is supposedly rare in Negros, a case of Landry's Ascending Paralysis due to AIP is reported in detail. The patient responded well to chelation with BAL, and has been maintained for 14 years on Thorazine and the addition of Benadryl just prior to her menses. Since she has always shown a high titer of PBG, even in remission, an attempt was made to reverse this with 5 AMP therapy.[14] In the first ten-day period, there was a decrease in titer and an increase in uroporphyrin, but unfortunately the Thorazine and Benadryl had been discontinued. The next ten days with a larger dose, the value returned to pre-treatment levels, and when provision was made for another ten days of treatment, the patient began to complain of paresthesias in the legs and a feeling of wanting to be on the go continually. The study was therefore stopped, and the patient returned to her Thorazine and Benadryl regimen. Thus, 5 AMP was not effective in reversing PBG in remission.

The various theories on different aspects of AIP have been discussed. It would appear that chelation is still the treatment of choice until further experience in this country on 5 AMP is reported. A diet high in carbohydrates, protein and vitamins, especially B_{12}, would be supportive. Paraldehyde or chloral hydrate for sedation, and adrenal replacement along with magnesium when indicated would be helpful. The best program in remission was outlined.

Finally, the genetic error is at a point in the biosynthetic pathway preceding ALA formation but certain extrinsic or non-genetic factors affect formation just beyond or much further along the Heme pathway. Thus, the lack of repressor substance and increased synthetase activity still fits into the genetic concept, but if liver catalase is reduced in the Turkish form it may be more apparent than real. The Watson-Schwartz test should be ordered when certain outlined conditions are evident. The mortality in *Ascending Landry Paralysis* due to AIP has been reduced to 50% by chelation techniques and occasional use of intravenous ACTH therapy. Promise of a further reduction to 30% by 5 AMP is seen.

REFERENCES

1 Waldenstrom, J., and Vahlquist, B.: Studien uber die Entstehung der roten Harnpigmente (Uroporphyrin and Porphobilin) bei der akuten Porphyrie aus ihrer farblosen Vorstufe (Porphobilinogen), *Zi Physiol Chem* 260:189-209, 1939

2. Saches, P., Ein Fall von akuter Porphyrie mit hochgradiger Muskelatrophie, *Klin Wschr* 10:1123-1125 (June 13) 1931.
3. Westall, R. C.: Isolation of Porphobilinogen from Urine of Patient with Acute Porphyrie, *Nature* 170:614-616 (Oct. 11) 1952.
4. Cookson, G. H., and Rimington, C.: Porphobilinogen: Chemical Constitution, *Nature* 171:875-876 (May 16) 1953.
5. Watson, C. J., and Schwartz, S.: Simple Test for Urinary Porphobilinogen, *Proc Soc Exp Biol Med* 47:393-394 (June) 1941.
6. Mauzerall, D., and Granick, S.: Occurrence and Determination of o-Aminolevulinic Acid and Porphobilinogen in Urine, *J Biol Chem* 219:435-446 (March) 1956.
7. Gunther, H.: Die Bedeutung der Hameto porphyrine in Physiologie and Pathologie, Ergebn, d allg. *Path u Path Anat.* 20.608, 1922.
8. Waldenstrom, J.: The porphyrias as inborn errors of metabolism, *Am. J. Med.* 22,758, 1957.
9. Shemin, D.: Ciba Foundation Symposium on Porphyrin Biosynthesis and Metabolism, Page 4. London 1955.
10. Ludwig, G. D. and Goldberg, M: Hyponatremia in AIP probably resulting from Inappropriate secretion of Anti-diuretic Hormones, *Ann. NY Acad. SC,* 104,710, 1963.
11. Perlroth, M. G. et al.: Acute Intermittent Porphyria *Am. J. Med.* 41,149, 1966.
12. Gajdos, A.: The Therapeutic Effect of Adenosine 5 Monophosphoric Acid inPorphyria Lancet 1,175, 1961.
13. Palmer, H. W.: Acute Idiopathic Porphyria with Acute Ascending Paralysis *Ann. Int. Med.* 13, 1500, 1940.
14. Talman, E. L., Dase, J. D. Neve, R. H., Fabbe, R. F., Aldrich, R. A.: Porphyrin Metabolism *J. Biol. Chem.* 212, 663, 1955.

CLINICAL NOTICES AND MEETINGS

The ACP will present *Clinical Auscultation of the Heart,* May 8-12, 1967, at the Georgetown University Hospital, Washington, D.C. Meeting place: Georgetown University Medical Center.

ACP presents *Clinical Applications of Recent Advances in Electrophysiology of the Heart,* at the New York University School of Medicine and Medical Center, New York City, May 22-26, 1967.

ACP will present *Current Physiological Concepts in Diagnosis and Treatment,* June 12-16, 1967, at the University of Cincinnati College of Medicine, Cincinnati, Ohio. Meeting Place: Mont Reid Pavilion, Cincinnati General Hospital.

On June 19-21, 1967, ACP will present *Clinical Applications — Recent Advances in Pharmacology* to be held at the Auditorium, College of Pharmacy, University of Iowa, Iowa City, Iowa.

Fee: Members $60; Non-members, $100. For registration or information, write: Edward C. Rosenow, M.D., Executive Director, ACP, 4200 Pine Street, Phila., Pa. 19104.

THE CASE OF MISTAKEN IDENTITY—

A Cause for Marital Conflict

PROLOGUE

Why does a man or woman select a particular individual to become their life-long marital partner and share the expected bliss this union anticipates? Despite numerous avowals of fidelity, loyalty and devotion, many couples are faced with numerous periods of conflict and combat throughout their marriage, for seemingly unknown causes that baffle and frustrate both the spouses, their families and friends and perhaps even the professionals whom they seek out for guidance and counseling. This author offers a possible explanation for this phenomenon.

Sheldon W. Weiss, Ph.D.†

In my private practice as a consultant in clinical psychology, I am confronted by many people in the throes of marital conflict and strife. Many times they voice the complaints: "What has happened to our marriage?" "Why has John (or Mary) changed so from when we first married?" or "Why is it that we don't seem to be able to communicate with each other any more?"

These and many similar accusations and queries seem to have a major trait in common; that is, there appears to be extreme difficulty in *identifying* the personality, role and image of the marital partner. Using a somewhat legal phrase, the marriage seems to suffer from a "case of mistaken identity." Neither partner can reconcile the image of the mate from the day of her or his marriage to the present time.

Although inevitably each partner professed and avowed eternal love at the marriage alter, something must intervene that casts doubt, ambivalence, hostility and negativism toward the mate. It is my hypothesis that this "change" in perception of the mates is caused by the realization that the identity of the loved one is "different" from the conscious and unconscious image projected by each mate at the time of marriage.

The prospective bride might have been perceived by her future spouse as kindly, thoughtful, gracious, passive, subordinate, sharing and loving. The prospective groom was viewed by his counterpart as respectful, strong, aggressive, gentle, caring, competent and devoted. Surely one would agree that all of these traits are quite enviable and desirable. Theoretically, an amalgam of these traits by the two individuals should produce a most salubrious, effective and lasting ideal relationship. High divorce rates, separation and protracted marital discord grimly testify to the doubtfulness of this presumed ideal relationship.

I suggest that review and analysis of the original role perception of the mates may shed light on this whole matter. Let us start first with the prospective bride. How and why might she have perceived her prospective mate with all his sterling charactistics? Without belaboring Freudian principles of the psychosexual genetic theory, did she identify her prospective husband with her father? Did she require an image of a man that resembled this first masculine love-object? If her early development led her to lean heavily on her father for support and reassurance, was he respectful, strong, aggressive, gentle, caring, competent and devoted?

---

†Dr. Weiss, formerly Chief Psychologist for the State Mental Hygiene Clinics in Delaware, was currently engaged in private practice of Clinical psychology in Wilmington prior to his death, March 20, 1967.

What, however, if these traits were most predominant in her mother with whom there was a more distant relationship in the bride's early upbringing? Then our young lady has a problem in really identifying the role and image of her husband to be. If superficially (and consciously) her future husband is perceived with the same characteristics that she wanted and desired in her father but were lacking in him (being present in her mother), we might attribute her attraction and desire to marry this man as an erroneous substitution of roles. It is hypothesized that the female should identify with her to develop and attain womanhood and, as a woman, she assumes many of the traits, consciously and unconsciously, of her mother. Therefore, following marriage with the aforementioned male, one may predict conflict, frustration and discord.

The very traits she thought most commendable and desirable, form the basis of much irritability, discontent and hostility. The more her groom assumes the demeanor and characteristics of her mother (respectful, strong, aggressive etc.) the more she feels cheated and disillusioned. Many times she must ask herself: "Why doesn't he behave or act like Daddy?" and "Why do men act so differently toward women after they marry?"

Somewhat in the defense of the male, might I suggest that the prospective groom probably had no idea of what dynamic inter-relationship existed between his bride and her parents prior to their marriage. By being "himself" and following the prescribed courtship roles, the prospective groom paid much attention to the so-called masculine roles of dominance, aggression, competency, thoughtfulness and caring. In a way these very traits seduce and distort the bride's image of what she "thinks" she desires in a mate.

After marriage, the bride wants to "prepare her nest" in much the fashion of her own upbringing and identification. She then assumes the role of wife in much the manner and style of her mother, i.e., respectful, strong, aggressive, competent and devoted. Perhaps she also continues the pattern of being over-protective to her mate, meeting her needs for control, authority, power, decisiveness and superiority over the male (as was present with her own parents during her early development). Father may have been dependent, indecisive, subordinate and passive in his relationship with the bride's mother.

The new bride becomes more and more perplexed as the marriage lengthens. Husband is asserting his seemingly masculine traits of authority, power and control while wife views this as a usurping of her traditional role and domain. If she is desirous in continuing the marriage, she probably reasons that the marital situation should return to more "familiar" grounds and rules. This she no doubt attempts through enforced regression of her beloved thus permitting her to become the efficient, loving, domineering, power-oriented, controlling, superior mate. Little realizing that her husband might not particularly care for this tactic and status quo of her early development, the marriage then becomes a battleground of discontentment. Sniping, sharpshooting, sabotage and espionage become the order of the day. The "cold war" of jealousy, suspicion and envy erupts into a "hotwar" of open conflict, anger, rebellion and combat.

Let us focus our attention now on the hero, the husband. What of his early development and his perception of a wife-figure? From his birth, in our culture, he has been lead to believe that he possesses a more favored and superior role in society. He is taught (and expected) to perform in the roles of aggressiveness, dominance, authority, power and control. How does the dynamics of his intrafamilial constellation shape his perceptions and expectations of a love-object? Was it his mother or father that possessed the control, authority and power of the family group? Was it mother or father who was the more submissive, passive, subordinate and loving partner? Whom did he identify with for his love, recognition, security and support?

If in reality it was his father who was controlling, authoritative, dominant and powerful while at the same time loving, protective, supporting towards his son, we may expect with some degree of certainty that he will incorporate his father's traits into his own self-image. However, were his father controlling authoritative, dominant and powerful yet distant and unapproachable while his mother provided the love, security, protection, support and recognition, an ambivalent identification is set up, with some feelings of bewilderment and uncertainty as to what traits constitute the eventual male stature he is expected to emulate and "become."

Thus the stage is set for the drama of the marriage to unfold. During the courtship phase each partner plays out the expected social roles trying desperately to hide any untoward or unexpected role behavior. The male opens car doors, brings his loved one flowers, asks her desires where they should go out for "fun" and occasionally allows her to express some personal ideas, opinions and tastes about clothes, furniture, children and possibly even the world situation. The female allows doors to be opened, enjoys receiving flowers, occasionally will suggest a place of entertainment and will carefully broach some points on world politics and personal values. Without belaboring the numerous volumes espoused on the psychology and physiology of sexual behavior, this area also receives some degree of attention and solution on the part of the courters.

Within a reasonable prescribed period of time, sufficient "data" is obtained by both people to convince them that marriage will assure and insure perpetuation of the blissful courtship and so the wedding bells peal.

It is surprising the rapidity with which the "case of mistaken identity" reveals itself. Professionally, I have encountered many patients who report recognition of this phenomena within hours of the commencement of the honeymoon! Having obtained the goal of getting married, the serious business of living commences for the couple. After departure from the formalized wedding procedure, the couple must then encounter each other as they really are and not as imagined, presupposed or desired.

The groom may set about establishing his perceived husband role in a dominant, authoritative, controlling, superior yet loving and caring manner. The bride may settle down to a more subordinate, protective, passive, permissive yet rewarding, supportive and recognition role towards her husband. True acceptance and understanding of each other's roles, needs and motivations by each marital partner should go a long way in providing a loving and salubrious climate for the two people to learn about each other in their new role as mates.

However, there is always the pitfall that the roles and images of each partner are incompatible and thus conflict arises. The bride may not place much value or desire in the role of being passive, submissive and subordinate to her mate. The groom may feel equally hindered by his wife's expectations that he be loving, kind, subordinate, inferior or passive to her wishes and desires.

But what of the "delayed reaction" to the case of mistaken identity? The married couple have weathered the initial several years of marriage to find their union blessed with several children. Prior to the childrens' birth, compromise and accomodation was the key note of the marital situation. The home is furnished; the routine of vocational and household responsibilities is established; and both partners appear to be seriously working at their marriage with a moderate degree of success. What ever the differences in temperament and character, they seem to blend with relative harmony and contentment.

At this point the case of mistaken identity may rear its ugly head. The wife, consciously and unconsciously, now wants the care and rearing of the children to be her responsibility following very closely her own early development and relationships to her parents. In a way she attempts to re-live her life again through her children aspiring that her boy-child will grow up like her daddy and her girl-child will develop like her mommy.

Continued on Page 106

EFFECTS OF PARTICIPATION UPON SELF-EVALUATION AND JOB SATISFACTION

• An individual likes to feel that his opinions and work are being considered and recognized in the job he is doing. Under these conditions both his interest and quality of work improve. The authors' study confirms this thesis.

SEARLES A. GROSSMAN, PH.D.
HARRY KAUFMANN, PH.D.

While collecting data for another study unrelated to the present one,[1] evidence was obtained suggesting that hospital aides derived considerable satisfaction from being consulted with regard to patient evaluation. This positive feeling appeared to stem from the implication that their judgment was valued rather than from the specific evaluation requested of them.

Findings of this nature are intuitively plausible; most people like to be made to feel important at their work, and frequently manifest their satisfaction by an increase of motivation, measurable by higher production, greater accuracy, more friendliness and cooperation, etc. Whitehead[2] reports findings to this effect, and Hoppock[3] emphasizes the effects upon job satisfaction in relatively menial occupations as a function of what is presumably a higher sense of importance.

It remains unclear, however, just how high a degree of "self-importance" is needed for measurable increase in work satisfaction to occur and what independent variable is most successful in producing this increase. The quite incidental effects of hospital aides' cooperation in Shear's study[1], for instance, had clearly discernible effects, as noted by nurses, in terms of self-evaluation and job satisfaction, even though the participants not only derived no tangible benefits, but actually assumed an albeit small additional workload.

The present preliminary study attempted to produce measurable differences on questionnaire responses by means of a minimal experimental manipulation. The principal assumption behind this procedure was that, if such effects should be obtained, the data would then justify a more elaborate, possibly parametric study on hospital aides, using more varied forms of motivational instigation, and a wider range of dependent variables, and possibly extending over several hospitals.

Procedure

Twenty-eight aides at the Wilmington VA Hospital were divided into an experimental group of eight men and six women, and a control group of eight men and six women.

Subjects in the experimental group were seen by one of the authors (HK) individually, and were given a questionnaire consisting of four questions, all of which were aimed at eliciting subjects' opinions and attitudes.

The questionnaire was prefaced by a statement to the effect that the hospital staff, in their constant endeavor to use every employee to his fullest capacity, felt that important and valuable ideas could be contribut-

---

Searles A. Grossman, Ph.D., is Chief, Psychology Service, Veterans Administration Hospital, Wilmington, Delaware; Harry Kaufmann, Ph.D. is Associate Professor, University of Toronto, Toronto, Canada.

TABLE 1

Means and Variances for Criterion Questionnaire.

		Exp. Group				Control Group			
		M(N=8)		F(N=6)		M(N=8)		F(N=6)	
		$\bar{X}$	S^2	$\bar{X}$	S^2	$\bar{X}$	S^2	$\bar{X}$	S^2
Question 1	Liking for work	4.8^{*}	1.0	4.8	0.4	4.6	0.4	4.8	0.5
Question 2	Importance of Aide	4.2	2.2^{d}	4.7	0.7	4.8	0.6^{d}	5.0	0.0
Question 3	Working Conditions	3.8	4.8^{a}	3.8	3.8	3.6	1.4^{a}	3.8	1.5
Question 4	Consideration of Views by Superiors	3.3	5.7^{b}	3.4	5.8^{c}	3.3	1.6^{b}	3.4	1.4^{c}

a, b, c, $p<.05$
d $p<.10$

Combined means, all questions, both groups.

$\bar{X}$ F = 4.3

$\bar{X}$ M = 4.1 ($p<.05$)

*A higher score is more favorable.

ed by the aides, who, by virtue of their contacts with both patients and staff, occupied a unique position. Experimenter further emphasized this expectation by paraphrasing the introductory statement. For each question one of five possible answers was checked.

The control subjects were also seen individually, but were given a questionnaire with four questions of an actuarial nature, e.g. length of service, means of transportation, etc. Examiner refrained from all but basic instructions. Between three and five days after each subject had been seen in the described manner, he was called back by examiner, and, under the pretext that "the second part" of the original questionnaire had only just been mimeographed, was given the criterion questionnaire, consisting again of four questions, two of which (3 and 4) were paraphrased from the experimental questionnaire, while the remaining ones attempted to assess directly subject's evaluation of and liking for his job. All questionnaires were completed anonymously and this point was emphasized by allowing subjects to place their answers in envelopes and seal them.

Results

Table 1 shows the mean values for the four questions of the criterion questionnaire.

1. The mean scores on the four questions were found to be not significantly different.
2. Female subjects scored higher than their male counterparts under all conditions (Mann-Whitney U for all questions and both conditions combined p-.05).
3. The variances on questions three and four in motivated conditions were significantly higher, for both sexes, than those for corresponding questions in control group. The *P*s of the corresponding F ratios being smaller than .05 in three out of four cases, .20 in the fourth case. Variances did not differ as a function of sex. On question 2, variance for experimental males only was somewhat higher ($p<.10$), three males in the experimental condition answered question 2 unfavorably. Table 2 examines the means and variances for those two questions which, for the experimental group, were common to the initial criterion questionnaires. For both questions, some insignificant improvement from the first to the second questionnaire is present for male respondents, none for females. Again, the pertinent variance ratios gave F values with $p<.05$ in three out of four cases.

Discussion

It is obvious that the experimental manipulation did not uniformly enhance subjects' evaluations of their job, placement, etc., and it appears plausible to conclude immediately that the experimental manipulation was of insufficient strength. Inspection of variances shows, however, that the independent variable was in fact quite effective, although it operated in opposite ways within a group. Some

TABLE 2

Comparison of Means and Variance for Questions Common to Both Questionnaires of Experimental Group.

	1st Questionnaire				2nd Questionnaire			
	M	S	F	S	M	S	F	S
	$\bar{X}$	S^2	$\bar{X}$	S^2	$\bar{X}$	S^2	$\bar{X}$	S^2
Question 3	3.4	1.4^a	3.7	1.6	3.8	4.8^a	3.8	3.8
Question 4	3.1	1.5^b	3.5	1.4^c	3.3	5.7^b	3.4	5.8^c

a, b, c $p<.05$

subjects, in other words, reacted to the impression that their opinions and attitudes were valued by the hospital staff by perceiving their role as more important and satisfying, while others responded by stating objections and criticisms.

These trends are correlated further by a comparison, for experimental subjects alone, of the two questions that were common to the two questionnaires. Again, no consistent change in mean scores is present, while variances changed in the predicted direction in all four cases, significantly so for three.

It seems, thus that the minimal manipulation applied had differential effects, contrary to more powerful manipulations studies heretofore. It was apparently successful in introducing a "permissive" atmosphere. sufficient for some subjects to induce the expected increase in self and job evaluation, while others were made to feel that they had been given an opportunity to express views and criticisms without fear of reprisal. The change from Questionnaire 1 to Questionnaire 2 indicated that both effects took some time to mature, and this fact leaves open the question whether greater homogeneity of responses would have occurred had a longer interval been allowed to elapse between the two questionnaires, or, as is more likely, whether genuine personality variables affected the manner in which this opportunity for expression was utilized.

One must of course consider the possibility that some subjects were "on their guard" during the administration of the second questionaire, and responded in a uniformly positive manner. Spontaneous comments on one part of many subjects, as well as guarded inquiry on the part of examiner after administration of one second questionnaire make this inference unlikely.

It is of particular interest to note that questions one and two, dealing respectively with subjects' liking for their job and the perceived importance of the aide's role in the hospital, were answered in a uniformly positive manner, even by those subjects who freely stated that working conditions could stand improvement, and that their views were not considered by their superiors. This particular result should be unaffected by issues of sincerity; after all, if subject felt free enough to express, under assurance of anonymity, quite trenchant criticisms on two questions he had no reason to distort on two others. The finding itself is of great significance, since it gives evidence, first, that aides almost universally like their jobs and have high self-evaluation, and, secondly, one is inclined to speculate that periodic opportunity for aides to express such criticism and suggestions as they might have, would be unlikely to result in empty, destructive "griping," but would instead tend to produce some genuinely worthwhile results.

Summary

Twenty-eight hospital aides at the Wilmington VA Hospital were given two questionnaires with several days interval. The first questionnaire of the experimental group was designed to elicit a sense of participation, and higher self-evaluation by asking for views and attitudes, while the control group answered factual questions without motivational connotations. The second, criterion questionnaire measured subjects' liking for their jobs, perceived importance, effectiveness of placement, and number of suggested changes. Two

Continued on Page 106

President's Page

THOUGHTS ON OCCUPATIONAL HEALTH ORIENTATION

"Sir William Osler believed that clinical medicine is best learned in the wards of hospitals, but Bernardo Ramazzini taught that occupational diseases are most effectively studied in the actual environment of the workers."

This striking statement, by Rutherford T. Johnstone, M.D., for many years a member of the Council on Occupational Health of the American Medical Association, well defines the basic dilemma within the medical profession with regard to the practice of occupational medicine. Osler's approach to occupational health was usually limited to such autopsy studies as his "On the Pathology of Miner's Lung". But Bernardo Ramazzini, the seventeenth century founder of industrial medicine, clearly envisaged the need for physicians to go into the "actual environment of the workers" if they were to reach a true understanding of prevention of the causes of occupational injuries and diseases.

In the twentieth century we are still struggling with this dilemma, largely because most members of the medical profession are even more solidly wedded to the hospital as the center of all medical practice than they were in Sir William Osler's generation. Meantime workers in industry and business increasingly need health maintenance services at the workplace in our burgeoning industrial society, as a legitimate function of modern preventive medicine. As results of this dichotomy, in-plant industrial physicians often feel themselves isolated from the general profession; and there still exists among a few physicians considerable doubt about the ethical legitimacy of occupational health practice.

To implement an approved occupational health program, the physician needs, like Bernardino Ramazzini, to make periodic inspections of the workplace to appraise and recommend correction of preventable hazards. He should also perform preplacement and such periodic physical examinations as are needed to prevent injury or occupational disease; maintain such immunization procedures and record keeping as are appropriate to health maintenance; and provide health and safety education and counseling, and advice about personal protective equipment where this will contribute to health maintenance. Usually these procedures are carried out in a clinic area on the premises except in very small plants that may be served from an office elsewhere in the community.

In the traditional practice of medicine, patients were shared by doctors only through formal consultation or referral, at the request of one of the physicians involved. In occupational medicine, the sharing often results from the legal responsibility of a third party, the employer, who under the statutes is required to furnish medical care for this workers' occupational disabilities, and to provide a safe working environment. Out of these statutory requirements there has arisen in the past 50 years the specialty of occupational medicine, which now proudly possesses board certification, research laboratories, and an abundant scientific literature. Family physicians, who sometimes resent the presence of an industrial physician in a plant where their patients work, need to remind themselves that this industrial "competitor" is not an unethical physician but rather a collaborator and consultant who is especially knowledgeable in the problems of their patients' working conditions. The two physicians should have frequent occasion to work together on common problems that involve both the domestic and working aspects of the same patient's life.

Medical training should include more emphasis on occupational health. This kind of spontaneous physician attention to preventive medicine will be an outstanding part of the new attention which physicians will pay to community health problems in the coming generation. Great contributions have already been made in this field. In the coming years the medical profession has a great opportunity to extend these contributions to even wider groups of the working public. In the promotion of accident prevention and health maintenance for all working people, physicians will demonstrate through their own enterprise their good citizenship as leaders in the community health team and their concern for the public's health.

It is noteworthy that the subject, "Mental Health and the Working Person" will be the subject of the Fifth Annual Mental Health Conference to be held Thursday, April 27th at the Student Center, University of Delaware.

H. Thomas Mc Guire

THE CASE OF MISTAKEN IDENTITY

Continued from Page 101

The husband then is faced with a new dilemma. Perhaps he does not want his son to be reared in the manner of his father-in-law nor his daughter similar to his mother-in-law. Perhaps the values, norms and ethics of the in-laws are viewed by respective mates as incongruent and incompatible with their own previous set of values, norms and ethics.

The stage is set now for the cold war to begin which may erupt into the hot-war of marital discord previously described. The dilemma arises as to who is in control, who has the real power, who really makes decisions, who is really "captain" of their little ship. These constantly appear to plague both, yet the partners are afraid to come to grips with the solutions to these questions. Both fear complete humiliation and defeat should they have to surrender any of their preconceived ideas, images, and desires. Change in attitude, function or motivation would spell destruction and irreparable impotency. Fight, with its chances for victory, is viewed by both partners as more favorable than conditional surrender and possible personality destruction.

So the conflicts and misunderstandings continue; energies are dissipated; the schism between the partners enlarges; all of which may lead to either divorce, separation or intolerant acceptance of a "poor situation" inhibiting or destroying each partner's native potential causing many serious developmental consequences towards the children resulting from the union.

This is the toll taken by the consequences of "mistaken identity" in marriage. How may it be prevented, lessened or remedied? perhaps the old bromide of "an ounce of prevention is worth a pound of cure" may be applicable. It might be suggested that both partners prior to marriage look deeper into their relationship and personalities; spend a great deal of time exploring each other's values, norms and ethics instead of determining their dancing ability, culinary skills or financal and familial status. Perhaps early recognition by both marital partners of the "real" identity of themselves may be as important and germane to a sustained, happy marriage as the requirement of a blood test for venereal infection prior to obtaining a license to betrothe.

EFFECTS OF PARTICIPATION UPON SELF-EVALUATION AND JOB SATISFACTION

Continued from Page 104

of the four questions were replicated from the first questionnaire of the experimental group. The experimental manipulation did not affect mean scores for any of the four questions, but significantly increased variances within groups for both sexes. Question two showed a higher variance for the experimental male group only. Females generally answered more favorably.

The credibility of these findings and possible inquiries into the effects of personality factors upon a "permissive," motivating setting were discussed.

ACKNOWLEDGEMENT

Our appreciation belongs to Miss Sophie M. Kimbar, Chief Nurse; Miss Dorothy E. Jones, Assistant Chief Nurse; and Miss Jean P. Kavanaugh, Associate Chief Nursing Service for education, as well as the nurses and aides at this hospital for collaborating, frequently at some inconvenience. toward the execution of this study.

REFERENCES

1. Shear, H. J., Ziller, R. C., and Kaufman, H., The Development of an instrument to Measure Self-Confirming Behavior. In preparation.
2. Whitehead, T. N., *The Industrial Worker.* Cambridge, Massachusetts, Harvard University, 1936.

Editorials

THE RESPONSIBILITY OF THE PROFESSION

The overcrowding of hospitals has become a national disease and it can be expected to progress. Recent legislation, requiring hospitalization prior to federal coverage for nursing home bills, has made beds even tighter. The increasing number of aged population in our hospitals can probably be attributed, for the most part, to medicare legislation. Hopefully, this legal snarl will be unraveled, at least in respect to the nursing home problem.

On the other side of the coin, is the growing awareness that this same federal legislation (because of it's pending close look at bed utilization) will, for the first time, give hospital staffs the backing they need to police the use of hospital beds. Utilization committees have, in the past, rarely had the authority to enforce their rulings and thus, these have usually been ineffective.

Now utilization is the law of the land. We are finally scrutinizing many of our time-honored nursing and staffing procedures as well as admission and length-of-stay regulations.

The bed shortage has been further emphasized by the shortage of nurses. In many hospitals, patient care is severely jeopardized by the lack of nurses; in other hospitals, beds are actually closed because of the shortage. Increasing the supply or the effective usage of well trained nurses may be more helpful in relieving the tight bed problem than concentrating efforts to shorten the average length of stay of patients.

The experience of the armed forces with hospital corpsmen has shown that many duties which have traditionally and legally been the responsibility of registered nurses only, can be done by well trained paramedical personnel. There is little doubt that such techniques would relieve nurses from many of their duties and multiply the effectiveness of those available. Using the "principles of progressive care," it should be possible to free another segment of the nurses for the staffing of acutely ill areas.

If we are to effectively use our nursing personnel and paramedical personnel, many changes must be made within the hospital structure to allow these two areas of the profession to develop. With the development of specialized nursing, the nursing profession has run into difficulties at the other end of the spectrum. For example, in the State of Delaware the nursing profession is not protected from possible medical-legal action if it is asked to give external cardiac massage. Unfortunately, there are many medical-legal reasons under the existing laws that make it very difficult for the nursing profession itself to affect the changes in responsibility that are so desperately needed.

The physician, who holds the final responsibility for the patient must now examine the role of the physician, the nurse, and paramedical personnel. Once the medical profession has taken a stand and clearly delineates its needs for the future, the nursing profession and the hospitals can effect the necessary legislation and administration. Without the vigorous support of the medical profession, the nurses and hospitals may have difficulty in meeting the challenge of the growing hospital population.

The Physician and The Pharmacist

A monthly feature of the Delaware Pharmaceutical Society

POTASSIUM CHLORIDE SYRUP

The recent unfavorable publicity regarding thiazide-potassium combination tablets is well known to everyone. As was to be expected, many psysicians took their patients off the combination tablets and put them on regular thiazide with supplemented potassium from other sources. The other sources of potassium include various juices (orange, tomato, and wine), and manufactured preparations such as salt substitutes, (Neocurtasal, Diasal, and Co-Salt), Potassium Triplex and Kaon.

The commercial sources of potassium, particularly, Kaon and Potassium Triplex have been quite popular with physicians who want their patients to be on a high and constant potassium supplement regimen. While these products supply adequate amounts of potassium ion, 6.6 mEq. and 15 mEq. of K. per 5 ml. in Kaon and Potassium Triplex respectively, the lack of chloride ion in these preparations, deserves some comment. Kaon and Potassium Triplex utilize potassium gluconates, bicarbonates, acetate and citrate for the source of potassium ion. The anions in this case are metabolized to bicarbonate, which can cause further problems in a patient with hypokalemic alkalosis. According to DeGraff and coworkers (Am. Med. Sci. 37:778, 1964) replacement of chloride ion may play an important role in correcting this alkalosis.

It appears, therefore, that potassium chloride is superior to other salts of potassium in patients being treated the thiazides. Since tableted potassium chloride preparations are now "out", the liquid would seem to be "in". A 10% solution of KC1 in cherry syrup is the simplest but certainly not the most palatable product that can be prescribed. Such a concentration will deliver 500 mg. or 6.7 milliequivalents of potassium and chloride per 5 ml. Other more palatable preparations have been described in the pharmaceutical literature lately. Some papers recommend a 20% solution in a suitable vehicle. A 20% KCl preparation is much too foul tasting to wish on any patient and so it is suggested that the product be taken in a glass of water-even then it tastes pretty bad. At any rate it is entirely possible to give KCl in divided doses throughout the day instead of one dose in the morning. Thus, instead of giving one teaspoonful of a 20% solution (1 Gram) in the morning, why not give one teaspoonful of a 5% (0.25% gram) four times daily?

The taste is much more humane, and such a product should be able to be compounded by any pharmacist from formulas available in current literature. In case the reader may want a formula the one below is suitable:

Potassium chloride	5 to 10%
Citric Acid	0.75%
Sucrose	40%
Saccharin Sodium	0.07%
Cherry flavor	0.13%
Lemon Oil	0.013%
Lime Oil	0.013%
Water qs.	

A recent article (J.A.M.A., Jan. 16, 1967) states that Potassium citrate or gluconate in slow-release-form tablets has less lesion inducing capacity than KCl enteric coated. Perhaps companies will begin marketing this form shortly for use with the diuretics.

Delaware Academy of General Practice

HOW CAN WE STOP THIS?

Case History:

A boy started his "habit" on a cough syrup sold to him through falsification of records. No, a prescription was not required and the druggist's only responsibility was to have the boy sign for it. Look at his record *now*—arrested in a "pot party"—picked up with dope peddlers—found consorting with call girls—and finally this—DEAD!

It is hoped that no family physician in Delaware has ever had a similar case record in front of him or can even remember one. The question that this case arouses is obvious. "Why wasn't the boy stopped at the time of his first unnecessary and unauthorized purchase of cough syrup?"

Why is simple! No one cared.

Where does the family physician's responsibility lie—not just medically, but morally? A young man enters a physician's office in the company of concerned but bewildered adults. Closer observation will show the escorted patient has a dazed countenance, his pupils neither pinpointed nor dilated, his appearance somewhat stuporous, outside stimulation by touch or sound arousing exaggerated and inappropriate response as though his cocoon of quiet has been invaded. Is this where the family physician steps in to halt the chain of events that ended so tragically for the patient mentioned at the beginning of this article? It would seem to be a propitious starting place.

One physician *did* start here and this is what happened. He confronted the patient with the truth which the patient accepted with promises of a change in his habits.

Contact with the drug store brought only the assurance that it would cooperate by apprehending any one suspiciously falsifying the signature records. Other drug stores offered to "pull" that drug and similar ones from their over-the-counter shelves. An appeal to the State Pharmaceutical Society brought prompt action from the association to warn and caution against the practice of allowing over-the-counter sales of such cough preparations.

A long distance telephone call to the wholesale manufacturer of the cough syrup brought a quick response, "No, we will not label our product *For Sale By Prescription Only;* that is a State function. We will not so label our product!"

They further stated that this was a holiday season; but definitely, after the first of the year, they would have a representative in town who would explain the company's position and give what assistance he could. It is now 104 days later and no representative has appeared!

This case has been presented to point out the pitfalls that lie at the beginning of our social problems. There is no one who cares enough to give help to the tempted or experimenting young person. It is also evident that very few people are concerned enough to discipline themselves to aid in correcting errors that industries or professions may have started.

Such permissiveness must be wiped out by strict adherence to self-discipline and the desire to stamp out a dangerous menace when and where it is first encountered.

Rhoslyn J. Bishoff, M.D.

In Brief

Speakers on "Ask the Doctor"

Speakers for May, 1967, on the Tuesday radio program, (11:05 a.m., "Ask the Doctor" WDEL) Produced by the Medical Society of Delaware are: May 2, Joseph A. Arminio, M.D., *Trauma in Industry;* May 9: Park W. Huntington, M.D., *Infections in the Hospital;* May 16: Robert W. Frelick, M.D.,*Cancer Chemotherapy;* May 23, David E. Saunders, M.D., *The Acute Bed Shortage;* May 30, Morris Harwitz, M.D., *The Dangers of Phone Call Diagnosis.*

Prices Increasing Radioisotope

The Atomic Energy Commission will raise the price of 15 processed radioisotopes effective April 21 in order to recover the full costs of production and distribution.

Another radioisotope, iodine 123, will be available for sale for the first time. It is being offered because of medical requirements for its use in the diagnosis of thyroid conditions and for other research and clinical purposes. Due to its very short half-life (13 hours), iodine 123 is being made available on a special order basis. The material is not available from private producers of radioisotopes.

Prices for 13 of the processed radiosotopes will be doubled. The price of fission produced iodine 131 is being raised to $1 per millicurie with the order at $25.

Details of the new price and delivery schedules may be obtained from Oak Ridge National Laboratory, Isotope Sales Department, Isotopes Develop-Center, P.O. Box X, Oak Ridge, Tennessee, 37830.

Newest AEC Booklet

Your Body and Radiation, a free booklet explaining what happens when ionizing radiation, from either natural or man-made sources, strikes human tissues, has just been published by the Atomic Energy Commission. It is a companion piece to *The Genetic Effects of Radiation,* issued last fall. . Single copies of each of the booklets are available free by writing the U.S. Atomic Energy Commission, P.O. Box 62, Oak Ridge, Tennessee, 37830.

Nursing Shortage

The full dimensions of the nursing shortage in this country are revealed in *Data,* a fact sheet prepared by the National League for Nursing. It states that there are 621,000 professional nurses employed today while the need is for 746.000 — a shortage of 125,000. The League's eighth biennial convention will be held May 8-12, at the New York Hilton Hotel. A shortage of licensed practical nurses also exists. The total number now employed is placed at 282,000, while the need is for 311,000.

The Month In Washington

The American Medical Association favors utilizing medicaid instead of expanding medicare. Dr. Charles Hudson, AMA president, outlined its position at a House Ways & Means Committee hearing on the Administration's bill "Social Security Amendments of 1967" (H.R. 5710). "Available tax funds should be used to give maximum health care to those who need help." Dr. Hudson said, "We believe that a properly administered Title 19 (medicaid) with realistic criteria of eligibility designed for economically disadvantaged persons, plus the encouragement of voluntary health insurance and prepayment plans for the solvent, provide the best approach to health care financing."

Some of the highlights of AMA's testimony included:
Section 125, to include the disabled. This could change the direction of medicare from a program for older persons to one aimed at various select categories. We believe Title 19 should be utilized for that purpose. We urge the Committee to reject this provision.

Section 127, including podiatry. If the amendment on podiatry services is adopted, the podiatrist could assume responsibility for the care of more difficult problems in medicine. We believe this to be unsound.

Secton 130, creation of Part C of Title 18. A new part C would cover payment for hospital services rendered to hospital outpatients; and for diagnostic specialty services to both outpatients and inpatients. The AMA opposes Part C *in toto*. . . . .

Section 131, physician certification. The AMA endorses Section 131 which would remove the requirement of a physician's certification for inpatient hospital care of each Medicare patient admitted to a general hospital. The Committee is urged to consider this amendment favorably.

Additional amendments proposed by the AMA. They recommend that Title 18 be amended to permit payment of charges for professional services on the basis of a physician's itemized statement of charges rather than a receipted bill. We also recommend the removal of the requirement for three days of hospitalization before qualifying for extended care benefits. We offer a recommendation relating to psychiatric care under Title 18.

Regarding Title 19, we recommend: that the program permit payment to the patient for services rendered to him by a physician on the basis of the physician's itemized statement of charges; that the program provide for the payment of physician fees on the basis of his usual and customary charges, using the same approach as that applied under Title 18. Title 19 benefits differ for mentally ill patients depending on whether they are above or below age 65. There should be no distinction in the services available to mentally ill patients.

Calendar of Local Meetings

Saturday, April 22, '67
8:30 a.m. Surgical Mortality, Delaware Division, Wilmington Medical Center.

Tuesday, April 25, '67
8:30 a.m. Case Presentation. Discussed by: Bernadine Z. Paulshock, M.D., Delaware Academy of Medicine.

5:00 p.m. Wilmington Medical Center. Department of Orthopedic Surgery, Delaware Division.

Saturday, April 29, '67
8:30 a.m. Clinico-Pathological Conference, Delaware Division, Wilmington Medical Center.

Auxiliary Affairs

PROFILE OF THE PRESIDENT — SUSSEX COUNTY AUXILIARY

I was born and raised in Muncy, Pennsylvania and finished school just as World War II began. In the wave of patriotism, I took a job with the Army Signal Corp as a civilian. This took me on a paid tour of the East as I was transferred from Philadelphia to Boston, New Haven, New Orleans, Atlanta and back to New Haven.

When the war ended, I decided to become a medical technician and began my training in New Haven under the auspices of the Yale School of Medicine.

It was here that I met my husband, a returned veteran whose college career had been interrupted. We were married in 1947 which makes this year something of a landmark for us, since we will soon celebrate our 20th anniversary.

Again began a time of moving as my husband completed his undergraduate studies at Yale, then went to Cornell for his Masters degree. Next we spent four years in New York City while he attended medical school.

At the end of medical school and just in time for a nice graduation present in 1953, our son was born. We next went to Brooklyn for two years, and finally to Hartford for the last three years of his residency. During all this time I worked as a medical technician and really enjoyed it.

In the fall of 1958, we settled in Milford, Delaware, and our moving was over. Since then despite my husband's very busy life as an obstetrician-gynecologist in a small town, we have found time for a lot of varied activity.

March 9, 1965, marked another red letter day in my life as I received a little piece of paper that said I was a fully licensed private pilot. Now indeed I had wings, and distance is not an obstacle since it no longer exists for us. Of course, my husband received his license long before I did.

So goes a busy and happy life which still has time to include two years as president of our local P.T.A., two years as president of the Sussex County Medical Auxiliary and coming up will be two years as president of the hospital auxiliary. I also make most of my own clothing and am an active gardener. This leaves little time for boredom.

Harriet Devenis

FILMS AVAILABLE

The following films are easily obtainable for showing at auxiliary meetings and to community groups. They all bear on auxiliary activities.
To Heal These Wounds (15 min.), shot in South Vietnam. Order from Project Concern, Inc.
A Foundation to Build On (8 minute film strip) shows how AMAERF aids medical education. Order from AMA.
Meals on Wheels (35 minute color slides) shows *Meals on Wheels* program operated by San Francisco Medical Society Auxiliary. Order from AMA Woman's Auxiliary.
What is Homemaker Service? (10 minute film) depicts the homemaker's duties in the home and her relationship to family members and agency staff. May be rented for a fee of $2.00. National Council for Homemaker Services, Inc., 1740 Broadway, New York, New York.
To A Babysitter (16 minute color film). Order from AMA Film Library, 535 N. Dearborn St., Chicago, Ill., 60610.

**The Direct Line,* a newsletter for leaders of the Woman's Auxiliary to the AMA, February, 1967.

Delaware Medical Journal

MAY, 1967

VOLUME 39

NUMBER 5

Editorial . . .

THIRD FACTOR

A few concepts in renal physiology have remained stable during the past several years. From the clinician's point of view, salt and water balance is controlled within the kidney for the most part by aldosterone or antidiuretic hormone. Extra renal factors are limited to those that influence glomerular filtration rate and renal blood flow. Gradually, most clinicians have acquired a good working knowledge of the inter-relationships of these two hormones and most physiological problems can be explained by using the two factors, aldosterone and antidiuretic hormone.

A few problems, however, have remained unexplained and have disturbed the renal physiologist and the endocrinologist. It is well known that if a normal subject is injected with aldosterone, he will retain sodium and water until he gains about 10% of his body weight and then the subject will appear to become refactory to further weight gain and sodium will reappear in his urine. This is known as the escape phenomenon and has never been explained.

A similar phenomenon occurs with the injection of antidiuretic hormone. With antidiuretic hormone, large quantities of sodium are excreted in the urine in spite of a falling serum sodium. This response to "inappropriate antidiuretic hormone" is the cause for many well documented cases of hyponatremia. The clinician has learned that such patients will not respond to salt replacement but only to restriction of fluids.

Under normal conditions, the proximal tubule reabsorbs approximately 85% of the filtered sodium. If sodium is infused rapidly into a subject so that the intravascular compartment is expanded while the concentration of sodium presented to the proximal tubule is normal, a sudden drop in sodium reabsorption occurs. This drop may decrease total proximal sodium reabsorption from 85% down to 60% of the filtered sodium and a urine, high in sodium, is excreted. When glomerular filtration rate is held constant in the experimental animal, this response to a rapid infusion of saline still occurs; proving beyond a reasonable doubt that the change in reabsorption of the sodium in the proximal tubule is not dependent on the quantity of sodium presented to the tubule but, in this instance, to the increase in size of the intravascular compartment.

Several possible common solutions to these three phenomena have been proposed but the most attractive is that there is a third hormone or a *third factor* that regulates the quantity of sodium that is reabsorbed or rejected by the proximal tubule.

Recently, studies from several laboratories have presented very good evidence that *third factor* is released into the jugular vein in response to rapid saline infusion. This *third factor* causes the proximal tubule to reject sodium. So far, one mechanism controlling the release of this *third factor* appears to be increase in blood volume. We now await further description of *third factor's* control and release and for identification of its structure.

For the poor clinician, interpretation of salt and water balance has suddenly become complex; for the renal physiologist, it is suddenly clear. In either case, it appears that *third factor* is here to stay.

CLINICOPATHOLOGICAL CONFERENCE

WILMINGTON MEDICAL CENTER

OCTOBER 25, 1966

PRESENTATION OF CASE

A 66 year old white man was transferred from another hospital where he had been admitted complaining of low lumbar back pain which radiated into both legs.

Present illness: Five weeks before hospitalization he noted the sudden onset of pain in the lower back while bowling. The pain was relieved temporarily by rest but was present the following morning at which time he noted difficulty in walking. Coughing and sneezing intensified the pain. The symptoms continued and he was admitted to another hospital where he was treated for three weeks with traction and unknown medications without relief. A non-pruritic rash developed over the legs one to two days before transfer. The patient had a past history of hypertension of ten years duration but no other significant illnesses were recorded.

Physical Examination: The patient was a drowsy, obese, white man who frequently fell asleep between questions. The vital signs were: blood pressure 220/110 mm Hg., temperature 99.0 F, orally, pulse 72, and respirations 18 per minute. The pupils were small but equal and reacted to light and accommodation. The retinal vessels were normal and the optic discs were flat. The trachea was in the midline and no masses were palpable within the neck. The thorax expanded well and was clear to percussion and auscultation. The left cardiac border was in the midclavicular line; no murmurs were noted. No organs or masses were palpable within the abdomen. The prostate was smooth, 1 to 2+ enlarged and symmetrical without nodules. The patient appeared to suffer pain upon movement of his back. There was tenderness to palpation over the area of the 5th lumber vertebra. There was an erythematous, maculopapular rash over the lower abdomen and both legs.

Neurologic examination revealed weakness of dorsiflexion of the big toe, bilaterally. The patellar reflexes were decreased bilaterally, the left more than the right. The ankle jerk was absent on the left and diminished on the right. Abdominal reflexes were absent. The Kernig's sign was present but Babinski's toe sign was absent bilaterally. No sensory loss was noted.

Laboratory Examination: Admission urinalysis revealed a specific gravity of 1.014, pH 5.0, 3-7 white blood cells, 2-3 epithelial cells, and 0-1 hyaline casts per high power field. The hematocrit was 46.5%. The white blood count was 11,500 with a normal differential. The fasting blood sugar was 73 mg% and the blood urea nitrogen 16.6mg%.

Hospital Course: During the second hospital day the patient become stuporous and confused. The temperature fluctuated between 99 and 102 F rectally. An electrocardiogram was interpreted as "compatible with subendocardial ischemia". On the third hospital day, Cheyne-Stokes respirations were noted; he became increasingly stuporous but responded to commands. At lumbar puncture the opening pressure was 150 mm of water. Laboratory examination of the spinal fluid revealed 6 monocytes, protein 117 mg%, chloride 749 mg% and sugar 77 mg%. Culture of the spinal fluid and single blood culture taken on the third hospital day were negative for bacterial growth at 48 hours.

---

*Published by the Commission on Continuing Education of the American Society of Clinical Pathologists — No. 10. Used by their permission. (Case report and photographs).

By the 4th hospital day the skin rash had improved and the patient was less stuporous; however, Cheyne-Stokes respirations continued. Serum chemistries at this time were sodium 150 mEq/l, potassium 3.8 mEq/l, chloride 101 mEq/l, bicarbonate 28.8 mEq/l, calcium 12 mEq/l, and phosphorus 2 mEq/l. Serum proteins were, albumin 4.75 grams per 100 ml and globulin 3.16 grams per 100 ml, alkaline phosphatase 4.25 units, and acid phosphatase 0.89 units. The white blood count was 16,850 with 79% segmented neutrophils, 15% lymphocytes and 6% monocytes. The sedimentation rate was 24 mm per hour, corrected. A chest x-ray showed no evidence of pulmonary infiltrates but x-rays of the lumbar spine revealed almost complete destruction, without loss of height, of the 5th lumbar vertebra. No other osteolytic lesions were visualized.

By the 5th hospital day the skin rash had disappeared and the temperature had decreased to 99.0 F. On the 6th hospital day while he was still confused, the patient's relatives attempted to feed him ice cream which resulted in partial aspiration. Immediate examination by the neurosurgical service revealed slight cyanosis and 46 respirations per minute. Prompt tracheal suction produced some material but rales were soon noted over both lungs posteriorly, particularly on the right. Penicillin, 6,000,000 units twice daily, was started. A portable chest x-ray on the 7th hospital day showed pneumonic infiltrates in the upper and middle lobes of the right lung. The temperature fluctuated between 101 and 104 F. Early on the morning of the 8th hospital day the patient's respiration rose to 64 per minute, the pulse to 120 per minute, and he became hypotensive. He expired approximately 12 hours later.

DIFFERENTIAL DIAGNOSIS

DR. ROBERT N. FRELICK:* We will initiate the discussion by going over the analysis by symptoms which has been distributed to you. Some of the coding was not recorded on the second sheet. Two sheets have been distributed; one has the actual analysis, the second one is the coding. Part of the coding that is not clear bears the letters P, S, or A. I have made judgements in trying to determine whether I thought the symptom complexes as recorded are related to the primary disease (P) or secondary (S) to this or just an associated phenomenon (A). To the right of each column, I have indicated the relationship of the symptoms to time in relation to the patient's illness, starting at five weeks in one case, going down to O days, in a reverse count-off time with the D day the date of death.

By systems — the neurological symptoms include back pain, difficulty in walking, pain that was worse on sneezing, and pain radiating to both legs. Note the various etiologies. The classifications on the second page are those used by the Standard Nomenclature of Diseases to distinguish types of etiology. These include, (1) genetics; (2) disease of intoxication; (3) trauma; (4) circulatory; (5) disturbances of innervation of psychiatric control; (6) static mechanical abnormalities; (7) disturbances of metabolism or growth; (8) new growth, neoplasm; and (9) uncertain, inflammatory, etc.

A congenital anomaly as a cause of pain does not seem likely, a toxic cause does not seem related. Trauma seems to be a good possibility. The patient was bowling. This could cause a direct injury, possibly to an old lesion, that might have exacerbated this back pain. Neoplastic growth could also have been the basic cause. Disturbed metabolism, such as osteoporosis could have predisposed him to injury. Number (6), static abnormality, a disc could give us this type of pain which was worse on sneezing and radiated to both legs. This suggests more pathology than we see with the usual disc.

Neurological Findings

The neurological findings which we have in our second grouping can be similarly analyzed. These included weakness of dorsifle-

---

*Dr. Frelick is Director, Department of Medicine, Wilmington Medical Center.

ANALYSIS BY SYMPTOMS AND SIGNS BY SYSTEMS

Neurological System

P	Back Pain	5 wks
P	Difficulty Walking	5 wks
P	Pain worse w/sneeze	5 wks
P	Radiates to both legs	5 wks
	CODE: 1+; 3+++; 8+++; 7++; 6+++	
P	Weakness dorsiflexion Lg Toe	8 D
P	Negative Babinski	8 D
P	Positive Kernig	8 D
P	Left Ankle Absent	8 D
P	R. Ankle J. Decreased	8 D
	Abdominal Reflexes Absent	8 D
	CODE: 1++; 2+; 5+; 3++; 8++; 7+; 6++	
P	No Sensory Loss	8 D
	Optic Discs	8 D
	Pupils Small & Reactive	8 D
	No Psychiatric History	
	CODE: 5-0; 8+; 7++	
S	Coma	7-4 D
S	Drowsiness	8 D
S	Poorly Responsive & Confused	7-0 D
	CODE: 1++; 2++; 3++; 4++; 5+++; 7+++; 8++	
S	Cheyne Stokes Resp	5-0 D
	CODE: 4++; 5++; 9+; 8+	
S	Spinal Fluid Pressure 150	6 D
S	S.F. Protein 117	6 D
S	S.F. Chloride 749mgm%	6 D
S	S.F. Sugar 77 mgm%	6 D
	S.F. Monocytes	6 D
	S.F. Culture Negative	
	CODE: 1-0; 7+; 9+; 2+; 4+; 8++	

Pulmonary

P	Cough	3 wks
P	Smoking History not given	
A	Trachea Midline	8 D
A	Chest Wall Expands Well	8 D
A	Lungs Clear P & A	8 D
A	Chest X-Ray Neg	8 D
	CODE: 0	
S	Cyanosis After esp Ice Cream	2 D
S	Rales Lung esp Right	2 D
S	Pul Infiltrated RML & RLL	2 D
S	Resp rate 46	1 D
	CODE: 1+++; 2+; 8+; 5++	
S	Resp Rate 64	0 D
	CODE: 4+++; 2+++; 3+++; 8++	

Metabolic

S	Serum Na 150 mEq/1	4 D
A	Serum K 3.8 mEq/1	4 D
A	Serum C1 101 mEq/1	4 D
A	Serum Bicarb 28.8	4 D
	CODE: 0	
P	Serum Calcium 12 mEq/1	4 D
P	Serum P 2 mEq/1	4 D
	CODE: 7+++; 8+++	
P	Temperature 99 to 102	8-3 D
S	101 to 104	2-0 D
	CODE: 1+++; 2++; 9++; 8++	
A	Thyroid not Enlarged	
A	Fasting Sugar 73 mgm%	8 D
	CODE: 7-0	

Orthopedic

P	Sudden Back Pain Bowling	5 wks
P	Pain on motion of Back	8 D
P	Tender over L 5	8 D
	CODE: 3+++; 6+++; 8++	
A	No Other Joint Sx	
A	No P.H. Back Ache	
	CODE: 1++; 2++; 7+; 3++; 8++	
P	3 wks traction without help	4-1 wk
P	Destruction L 5	4 D
	CODE: 8+++; 7++; 1+	
A	Alkaline Phos 4.25	4 D
A	Acid Phos .89	4 D
	CODE: 8+; 7+	

Gastrointestinal

A	No hist or Sx given	8 D
A	Prot A/G Normal	4 D
A	Alk Phos 4.25	4 D
A	No Abd Masses or Tenderness	8 D
	CODE: 0	

Genitourinary

A	Prostate 1-2 Plus	8 D
A	BUN 16	8 D
A	S. G. 1014	8 D
A	No History voiding Symptoms	
A	Ph 5	8 D
A	O 1 Hyaline Casts	8 D
	CODE: 1-0; 8-0	
S	3-7 wbc Urine	8 D
	CODE: 1+	
A	Acid Phos 89	4 D
	CODE: 8-0	

Hematologic

A	WBC 11,500	8 D
	CODE: 1+	
S	WBC 15,000	4 D
	79% Seg, 15% lymph 6% Mono	4 D
	CODE: 1+	

A Hematocrit 46 8 D
CODE: 0

A Sed Rate 24 4 D
CODE: 1+

A No Nodes Neck 8 D
CODE: 8-0

Dermatologic

A Rash-Maculopapular legs and abdomen 10-3 D
CODE: 1+; 2++; 8++; 9+

Cardiovascular

A Hypertensive 10 Yrs
A Normal Size heart 8 D
A BP 220/110 8 D
A Pulse 72 8 D
A Retinal Vessels Normal 8-D
A No Murmurs 8 D
CODE: 5++;
S Terminal Pulse 120 0 D
S Shock 0 D
S Cyanosis 1 D
CODE: 1+++; 5++; 9+; 2++

ETIOLOGY

1 Genetic and Prenatal
2 Disease of Intoxication
3 Trauma
4 Circulatory
5 Disturbance of innervation or psychiatric control.
6 Static Mechanical abnormality, i.e. stone obstruction.
7 Disturbance of metabolism—growth nutrition
8 New growth—neoplasm
9 Uncertain—inflammatory—unknown

0 — Not Related
+ — Slight Chance
++ — Mild Chance
+++ — Likely Possible
++++ — Most Likely

xion of the large toe, negative Babinski, positive Kernig's absent left ankle jerk, decreased right ankle jerk, and absent abdominal reflexes. The absence of abdominal reflexes and the presence of decreased reflexes is probably of no significance. If the patient had hyperreflexia with the absent abdominal reflexes, this may have been of more signficance. The negative Babinski tends to suggest that the decreased ankle jerks and weakness in dorsiflexion of the large toe, etc., are probably spinal cord or lower in origin. The absence of sensory loss, the normal optic discs, the pupils that are small and reactive, the absence of any psychiatric history, is not too helpful except that it probably does tend to rule out, at least on the basis of the information given, Central Nervous System (CNS) causes, that arise above the cord.

Next, we come to the symptoms that occurred in the hospital — the coma, the drowsiness, the poor responsiveness and the confusion. This suggests a number of possibilities. The coma, as we are all aware, is not too helpful a symptom because it can be found in many different circumstances. It is bothersome in this particular case to find coma, as a primary symptom of hyperparathyroidism or hypercalcemia. Drowsiness and the poor responsiveness would be more consistent with the hypercalcemic levels. This could be the result of some toxic agent not yet mentioned. If the patient hurt his back in falling, he might have hit his head. A circulatory cause could be considered in spite of his age group. It is possible that he had a vascular accident. Metabolic changes such as we see with hypercalcemia, uremia, etc., could explain his "coma". There is nothing that would point to diabetes. Neoplastic growth, either a primary tumor in the brain or a secondary neoplasm, has to be included in our differential. The Cheyne-Stokes respiration, which occurred from the fifth day on is not specific. This is not a clinical finding one sees with hypercalcemia. It is more likely to be found with vascular disease. It is not likely to be the only manifestation of a CNS neoplasm.

The spinal fluid findings which were essentially normal except for a spinal fluid protein of 117 tended to rule out infection. The high protein could possibly be there as a result of pressure on the cord secondary to metabolic disease, static abnormality or new growth. This could be secondary to a vascular lesion; it could be secondary to a central nervous system tumor. It is a little high for any infectious disease without finding some cellular components in the spinal fluid. The

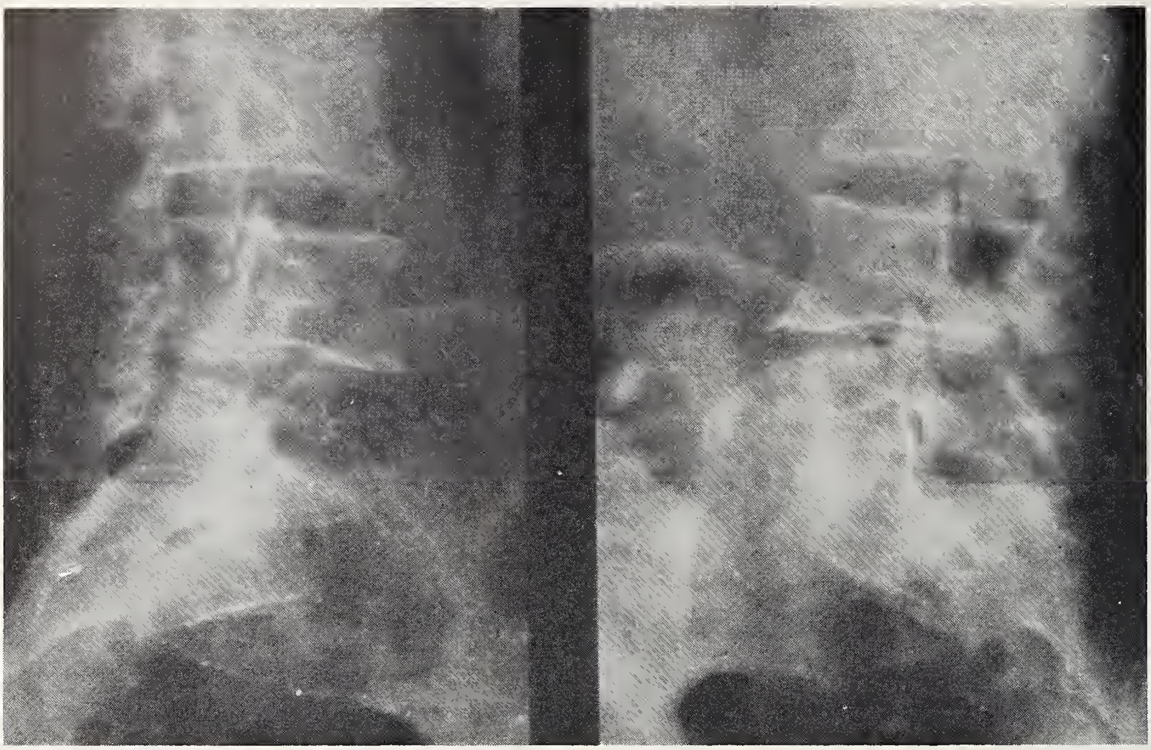


Figure 1

sugar would tend to rule infection out. The chlorides are a little higher than I would normally expect. It can be up in uremia. Some describe it up in tuberculous meningitis; but in the absence of other associated findings, I would tend to disregard the high chlorides. The chief abnormality is the high protein.

In reviewing the pulmonary history, it is not clear if he had a cough or not. The back pain was said to be worse on cough. That is the only mention made of cough. We have no smoking history given. We were told that on admission to the hospital eight days prior to death, that the pulmonary findings, including the chest x-ray, were normal. This tends to rule out cardio-vascular disease and a pulmonary neoplasm. He did become cyanotic, presumably secondary to his aspirating the ice-cream. It could be also secondary to bulbar palsy or some similar mild neurological defect resulting from the primary pathology in the central nervous system noted above. The rales in the lungs noted two days prior to death, the pulmonary infiltrate at the same time, and later the increased respiratory rate on the day before death and the day of death, could all be looked upon as secondary phenomena and really not part of our primary problem. On the other hand, we should recognize that the man could have had some primary pulmonary condition that might have predisposed him to develop pulmonary findings with ease.

His metabolic findings indicate that four days prior to death, his serum sodium was elevated — this probably was a dehydration phenomenon. The most significant findings in the protocol are the serum calcium which was 12 mEqs., — I hope you noticed that this is mEqs. The phosphorus was 2 mEqs., — a phosphorus of 2 mEqs., is about the same in mgs. per cent which we are used to using in this Center. The calcium value would be 24 to 25 mgs. which is extremely high. This tends to narrow the differential diagnostic field down to those conditions which will or will not be associated with hypercalcemia with a normal phosphorus. There was only one

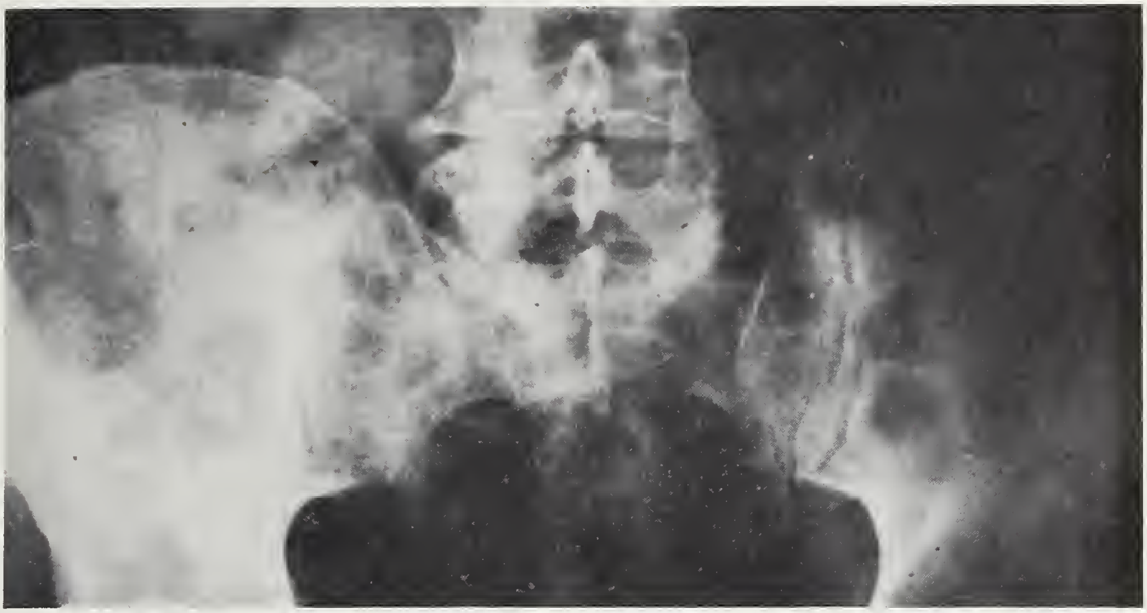


Figure 2

reading taken just four days prior to death. We do not have any preceding values. Urinary findings would have been helpful in trying to arrive at a further differential diagnosis.

In hyperparathyroidism, the calcium is elevated; the phosporus is low and the alkaline phosphatase is usually elevated. The alkaline phosphatase was normal. The degree of elevation of the calcium plus the normal alkaline phosphatase in the presence of known bone disease would fairly effectively rule out hyperparathyroidism. The other thing it would tend to suggest is that his bone disease is localized. It is possible in hyperparathyroidism to have localized bone disease, like a cyst or cyst formation, but usually if one looks further, one will find evidence of generalized disease. It might be appropriate to see the x-rays at this time in hopes of defining how localized or generalized any evidence of bone disease is.

Dr. Renzi: There is not a great deal to go on in these x-rays as we do not have a complete study. On these oblique views, there is marked destruction of the body of L-5 with loss of the anterior cortical margin. No significant sclerotic reactive changes are noted. The pars interarticularis on both sides are intact. (Figure 1)

On this slide of the AP view, there appears to be loss of the pedicle of L-5 on the left which indicates that there is posterior extension of the destructive process. There are sclerotic changes about the left sacroiliac joint which I believe represents a degenerative change. There are gas shadows overlying both innominate bones with no definite evidence for destructive changes. I believe there is some generalized osteoporosis of the spine and pelvis. (Figure 2)

Dr. Frelick: Could it be traumatic?

Dr. Renzi: Insofar as I can tell, it is a destructive osteolytic process with no bone reaction.

Dr. Frelick: Does the absence of loss of height of the fifth vertebra have any significance in terms of whether we are dealing with a localized destructive lesion, perhaps an isolated bone cyst or an angioma type phenomena, or a cystic lesion one might see with hyperparathyroidism?

Dr. Renzi: The absence of loss of height of the vertebral body depends to a large extent on how long the lesion has been present and upon the amount of de-calcification. Cystic lesions as in a hyperparathyroidism or a vertebral hemangioma or a metastatic lesion can cause collapse of vertebral bodies.

Dr. Frelick: Would you be able to differentiate a lesion such as multiple myeloma from that of a metastatic bone lesion on this basis or not?

Dr. Renzi: There is osteoporosis of the spine; however, no other destructive lesions are noted. Both metastases and multiple myeloma can cause solitary lesions. A chordoma is also a common lesion in this region.

Dr. Frelick: One of the other possibilities that might explain the high calcium might be a localized bone cyst which was further injured when the man bent over some five weeks earlier. After he was put at bedrest for three weeks in traction, hypercalcemia developed as demonstrated by Dr. Dorph in his article on the cast syndrome. Bedrest alone, even in the absence of significant metabolic disease, in some patients, predisposes to an elevated serum calcium. This may be part of the explanation for the degree of elevation seen here, whether this be primary or secondary hyperparathyroidism or due to other causes. Thus a localized lesion could potentially cause this without having any systemic implications, although I think it would be rare to have a calcium of this level. Yet, calciums up to 17 mgs. per cent have been described. We were told that the E.K.G. showed evidence of ischemia. I was interested in seeing whether the cardiograph which was taken on the eighth day had anything that would suggest hypercalcemia. Cardiographs may have a decreased Q-T interval in hypercalcemia. I do not believe this suggests any hypercalcemia. It looks as if the Q-T interval is about .38 or more with a normal rate.

The chief abnormality is the mild S-T segment — changes most markedly noted in V4-5 and 6 were interpreted as secondary ischemia. If we can skip to the cardiovascular system for a second, it should be pointed out that he does have a positive cardiovascular history in terms of being hypertensive for ten years, and being admitted with a blood pressure of 220/110, even though the heart size is apparently normal, on the basis of a normal chest x-ray. His peripheral vascular status also seems to be normal on the basis of the description of the retinal vessels and a normal pulse. It could be that we are seeing in the cardiograph a reflection of his underlying hypertension.

This also brings us back to the other suggestion made earlier that his coma which we do not have explained at the moment, could be on a secondary vascular basis. He may have been prone to vascular disease. On this basis, he may have had a cerebrovascular accident, which we have to consider, at least statistically.

To get back to the high serum calcium. What other things besides hyperparathyroidism will cause this? The multiple myeloma has been already mentioned. The absence of the other lesions is a little against this. The absence of elevated urea, the absence of protein changes, the absence of protein in the urine, all would tend to be somewhat against a multiple myeloma, plus the fact that he had a normal hemoglobin. A person with a multiple myeloma who has this much derangement in calcium metabolism would be expected to have other evidences of the disease. Boeck's sarcoid is also always mentioned in differential diagnosis with hypercalcemia. There is little clinical history that would go with this. Another differential possibility is the milk alkali syndrome. The calcium does not usually go this high. Phosphorus is usually elevated more than this and we would expect to have some history of increased calcium ingestion with or without alkali. Hypervitaminosis-D should always be mentioned, along with milk alkali syndrome. These two examples of increased ingestion or absorption of calcium can be associated with a hypercalcemia. It would be unusual in either of these situations to find this type of a localized bone lesion, although in the milk alkali syndrome, fractures of the metatarsals occur.

Another cause is neoplastic lesion causing an osteolytic change in the lumbar vertebrae and then secondary to bedrest, hypercalcemia, etc. Or is there a neoplastic lesion which of itself is mimicking the parathyroid and putting out a parahormone or its equivalent and is responsible for the elevated serum calcium as well as for the lesion? The hypercalcemia as noted before may have been exacerbated by bedrest.

Review of other symptom complexes includes possible endocrinological lesions, the thyroid is not enlarged. This does not rule-in or rule-out hyperparathyroidism. A nodule in the region of the thyroid may help make a diagnosis of hyperparathyroidism. Its presence is helpful, its absence leaves us no further ahead. The normal sugar, which is a fasting sugar, doesn't completely rule out diabetes. The alkaline phosphatase and acid phosphatase were both normal. We have no gastrointestinal history given. We do have some suggestion that liver function was normal with a normal protein, A/G ratio, and normal alkaline phosphatase. From a genitourinary point of view, not only do we have the absent acid phosphatase but the prostate is only slightly enlarged and the BUN is normal. The BUN *was* on the eighth day; I would be curious to know what it was on the second, third, or fourth days. This suggests that his hypercalcemia was not of too long duration. It is unlikely to have a hypercalcemia of any duration without an associated elevation of blood urea, particularly at the level we are talking about. Once again, this suggests that bedrest may have played a very signficant part, at least timewise. In dogs with parahormone injections to raise the calcium level, the dog may become uremic in 48 hours. I am not sure it is as fast in humans, but we are aware of the patient with metastatic breast disease who has been doing fairly well and when brought to the hospital on bedrest becomes suddenly much worse or shows fairly rapid rise in serum calcium. In the urine itself, there are a few hyaline casts; I am never quite sure what this means. The patient has 3 to 7 white cells in the urine. The hematological studies are not particularly revealing except for mild leukocytosis on the fourth day which has a rather non-specific level of 15,000 that could be due to infection or any number of inflammatory reactions. His normal hematocrit tends to make the possibility of disease like multiple myeloma seem less likely. The normal sedimentation rate or very slightly elevated sedimentation rate once again is a borderline value.

The rash, I am unable to tie in with any one of the diagnoses already mentioned. I have looked through several dermatological texts as well as articles on hyperarathyroidism, unsuccessfully, trying to find out whether one can ever find a macular papular rash involving the abdomen and the legs. I hope Dr. Nelson may be able to tell us whether he knows of any neurological diagnosis that would give a rash with this distribution. I am left without a very clear-cut explanation for the rash. The fact that it is from the waist down suggests that it could be a local rash secondary to pelvic traction apparatus. He was getting various types of drugs so that a drug eruption is possible but it seems strange to have a drug eruption localized to the lower extremities. I did not interpret this as a purpuric rash which might be a better explanation. Another possibility suggested from the literature, although it has not been true in my own experience, is an underlying neoplasm, particularly lung and breast. I must admit that if I have seen these from tumors, I have blamed them on something else. Dr. Nelson, do you have any suggestions for the existence of rash from a neurological standpoint?

Dr. Nelson: At first, I thought this to be the herpes complication of some neoplasm or some other pressure effect around the posterior roots. I must admit that the neurological lesion is somewhat higher than L5 and I think you would have place it up as high as L2, but I agree with you that you can't explain the rash at least on the basis of the abdominal segments we know of. I am just about as puzzled as you are. The only possible cause of the disease could be due to extradural process which segmentally involves higher levels that we know we have in the protocol, if this is a herpes zoster type lesion. Balancing that, is the fact of the rapid clearance. I suggest we forget about herpes zoster.

Dr. Frelick: I think this may be a red herring in terms of our primary diagnosis. His terminal phenomena of shock, cyanosis, and an elevated pulse is difficult to think of as primary. The terminal findings are fairly clear cut. He aspirated, developed secondary pneumonitis or bronchopneumonia, and later developed shock. I suspect that he was uremic by this time especially if his calcium was really high. What is the differential diagnosis? We have considered a localized lesion, perhaps a benign bone cyst of the spine which was injured, bedrest and secondary hypercalcemia, and the sequence of events causing the final complications. It still does not explain the coma on the basis of hypercalcemia. I am willing to concede that I have seen very few patients who have a calcium of 24 or 25 mgs. per cent but I have seen them this high and the patients have been pretty unresponsive on occasion, but I wouldn't call them really comatose. There was some actual clearing of the coma by the fourth day when his calcium was found to be highest. I am not really sure that his calcium was the highest then, but it is the only calcium we have. The coma started on the seventh day prior to death shortly after admission to the hospital when his urea was normal. This is another area in which we have inadequate data with which to draw a clear-cut conclusion. As with the rash, there is no good explanation for the coma on the basis of what appears to be the primary pathology — of a lesion in L5, with associated hypercalcemia. One could pre-suppose that this is primarily a neoplasm in a patient who may also have a central nervous system metastatic lesion. There is nothing else to base it on except for the fact that he had a few abnormal reflexes, but it seems that those could be well explained by the lesion in L5. The elevated spinal fluid protein could be a reflection of a metastatic neoplastic lesion in the brain but it could also well be the result of the pressure on the cord itself. It is a little higher than we normally see with disc pathology, for example, but it is certainly not too high for what we see with spinal cord tumor. In order to make a single diagnosis, which I recognize may be fraught with error in a patient in this age group, I would be inclined to say this man has a bronchogenic carcinoma with metastasis to the lumbar spine.

Central nervous system metastasis would best explain the entire sequence of events. A bronchogenic carcinoma is suggested in spite of a negative chest x-ray because of predilection for this type of tumor to have an increased calcium even with limited bone lesions. The final impression is made on the basis of data that is not completely adequate; that the coma may be unrelated phenomena, possibly due to a localized cerebrovascular accident.

Dr. Lang: He was described as stuporous; I am not sure that coma is the right word.

Dr. Frelick: I may have misinterpreted this. Let me refer to the original. You may be right. On the second sheet, it says he became increasingly stuporous. Aside from what was noted initially — Cheyne-Stokes respiration, etc. I interpreted this as being coma or pre-coma. I was a little disturbed by the degree of stupor that was suggested. The Cheyne-Stokes respirations also bothered me because I can't explain them on the basis of hypercalcemia per se.

I think that without some associated cerebrovascular disease or with chemical abnormality such as is seen in uremia, the hypertension per se would not produce this type of confusion. I wonder if Dr. Nelson would make any further comments on the Cheyne-Stokes respirations and their implication.

Dr. Nelson: I was wondering if the patient may not have had some kind of brainstem lesion to explain this stupor in addition to the high calcium level. There are just hints of this — the small pupils, trouble swallowing terminally, and his Cheyne-Stokes respiration and the altered mental state but still able to respond to command. The impression is that the brainstem area, not the cerebral hemispheres, may contain some type of lesion. This could be a metabolitic lesion but along the ideas of neoplasm, one might toss in the possibility that he has something in the brainstem such as metastasis in the brain.

Dr. Frelick: Would you be more definitive? Would you say that metastasis would be more likely than a vascular lesion?

Dr. Nelson: I can't say. This could be basilar artery disease, too.

Dr. Frelick: Several things weren't mentioned; for example, syphilis can cause this type of rash.

Dr. Flinn: I think that we can conclude that those items left out of the protocol were negative. Would you like to proceed with the pathology?

Dr. Frelick: Yes, unless there are other questions. Does anyone else have any other suggestions or comments?

Doctor from the audience: Do you think the rash could have been related to sarcoid?

Dr. Frelick: It doesn't sound like a sarcoid rash.

Dr. Robert W. Frelick's Diagnoses

1. Bronchogenic carcinoma with brain and bone metastasis.

2. Hypercalcemia secondary to metastatic bone lesion.

PATHOLOGICAL DISCUSSION

Dr. Huntington: This is a close-up view of the lung. You can see that there are cavities here which are abscesses. The whole parenchyma is very solid looking. It shows the pneumonia that was present. The next slide is a view of the microscopic lung section, showing early infiltration by inflammatory cells and some edema.

The next slide represents an histological picture of the lesion replacing the fifth lumbar vertebra. It demonstrates a homogeneously cellular pattern of small cells, closely approximated, and having eccentric nuclei suggesting plasma cell types. (Figure 3)

The next section is of a Wright's stain preparation exhibiting a majority of myeloma cells under high power, showing the deep blue cytoplasm and clumped reticulum of the nucleus. A perinuclear clear space is also frequently present. (Figure 4)

These sections are typical of a myeloma whether it be a solitary tumor, as in this case, or a bone marrow preparation from a more diffuse manifestation of the disease.

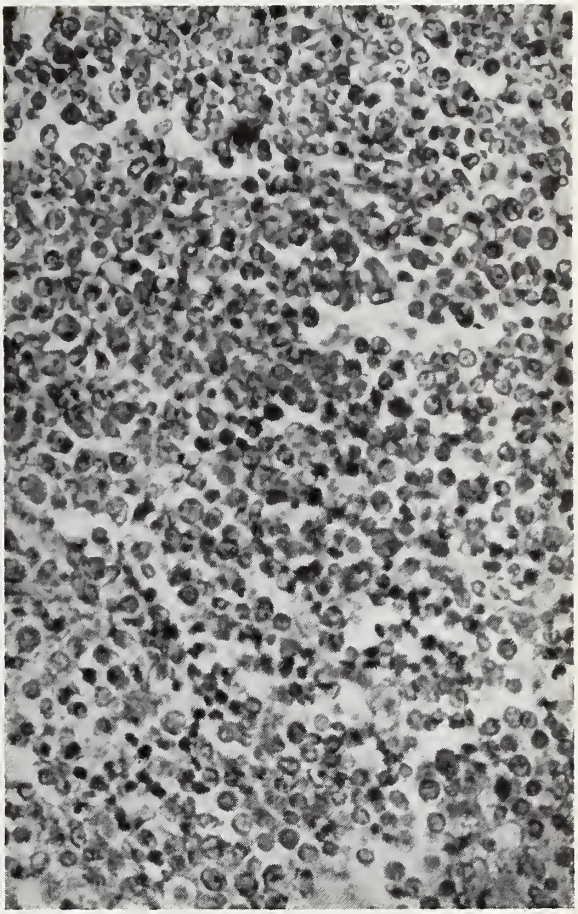


Figure 3

Chemical examination of the post mortem specimens revealed a serum calcium of 12.2 mEq/liter, serum phosphorus 8.49 mEq/liter, spinal fluid protein 37.5 mg%, and spinal fluid chloride 796 mg%. Electrophoresis performed on post mortem serum revealed a sharp, tall spike in the gammaglobulin fraction. Immunoelectrophoresis was not performed on the specimen.

ANATOMICAL DIAGNOSES

1. Solitary plasma cell myeloma of fifth lumbar vertebra.
2. Organizing acute bronchopneumonia, right lung.
3. Hypercalcemia with focal calcification of renal tubules.

Dr. Frelick: This demonstrates that multiple myeloma is a variable disease. As emphasized in a tumor conference here with Dr. John Durant several months ago, myeloma is getting to be a more common disease. Its incidence at medical centers is definitely increasing. We haven't been able to note the increased incidence locally from our tumor registry records. The more myeloma we see, the more pecularities we see, either in terms of finding abnormal proteins with no bone lesions, or finding localized bone lesions with normal protein. Once again, this indicates the need for electrophoretic studies when suspicious. I still consider this to be atypical, but I think that it is not uncommon for myeloma to be atypical. I have never seen myeloma with such abnormal degrees of hypercalcemia without more widespread evidence of disease or protein changes. It would have been interesting to know what the electrophoretic pattern was on protein in the spinal fluid.

Dr. Flinn: Would you care to define what multiple myeloma is?

Dr. Frelick: Multiple myeloma is actually a neoplasm involving the plasma cell series and it may start off as a localized phenomenon, a plasmacytoma, which it is thought, in most situations will become generalized. It usually is a generalized disease, involving multiple areas of skeleton; but it is not as generalized as hyperparathyroidism, where there are diffuse bone changes. This may be more spotty but it is a disease which is associated very often with renal involvement, uremia, etc., Bence Jones proteinuria. The plasma cells are supposed to be responsible for the production of the abnormal proteins and the different types of abnormal proteins seen. They aren't all the same, dependent upon the different types of plasma cells involved. You can see different classes of plasma cells, apparently responsible for different types of protein peaks. Myeloma proteins don't all peak at the same place. We have several patients we are now following who have slightly abnormal proteins and nothing else the matter with them. A bone marrow done on this patient could have been normal, but this doesn't necessarily rule the diagnosis in or out. The protein change doesn't rule it in or out either.

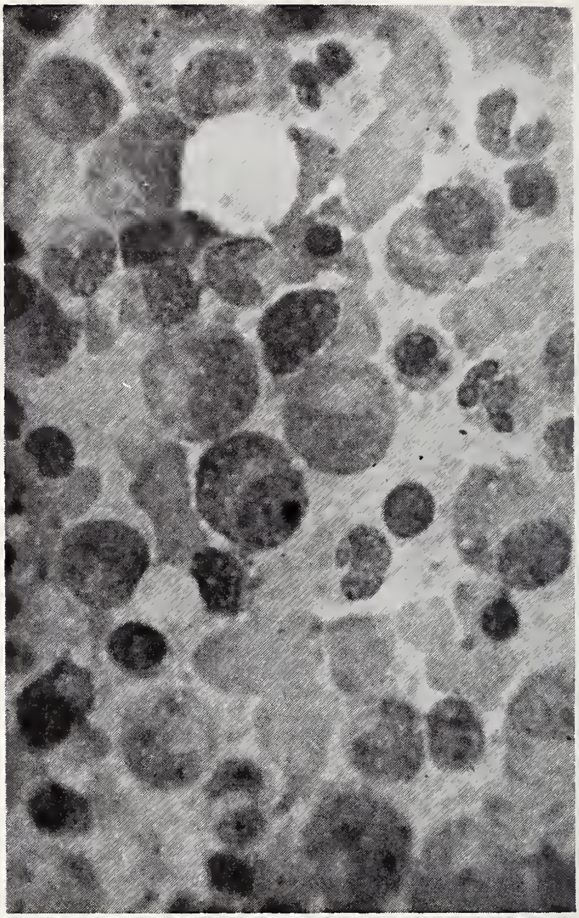


Figure 4

Any other questions?

Dr. Hartenauer: What about the rash? If you had taken a biopsy of the rash, would you have seen something there in case of multiple myeloma?

Dr. Frelick: I don't think the rash can be explained by the myeloma. I'll ask Dr. Huntington whether he would have been willing, for example, to make a diagnosis on an aspiration biopsy from that material of the spine since metastatic melanoma has been confused with myeloma.

Dr. Huntington: That's a problem; it depends on how much tissue one has to evaluate.

CORONARY EMBOLISM WITH SURVIVAL

CASE REPORT

William T. Hall, M.D.
John B. Mac Gregor, R. Adm. (M.C.) USN Ret.

A 27 year old police officer was admitted to the U.S. Naval Hospital, Bethesda, Maryland, on January 22, 1953, complaining of pain in the left gluteal area for 5 days and pain in the left knee of several hours duration.

On December 20, 1952, he had developed a sore throat which was treated with intramuscular penicillin. This was followed in two days by itching red blotches, excepting the head. This cleared in a week on "pills for penicillin" reaction. Since December 23, 1952, he had noted purplish discoloration and hardening of the tips of his fingers excepting his thumbs and occurring more in the smaller fingers. They would feel hot and sore to touch but would clear up in 2-3 days. On one occasion he could not turn his eyes to the right because of pain but this cleared spontaneously. On January 16, he developed backache and on the next day a pain in the left gluteal area which was severe enough to prevent walking.

Past history revealed that he had been discharged from the Marine Corps in September 1944 for rheumatic fever and that he had been advised of a heart murmur at that time.

Systems review disclosed that he had been subject to pains in the elbows and wrists for the past 18 years, but he recalled little about them and had not sought medical aid.

On *Physical Examination* his temperature was elevated to 104°F and his pulse to 120. Respirations were 20 and blood pressure 130/60 and 120/60 in the right and left arms respectively. The heart was not enlarged to percussion and the rhythm was regular. There was a blowing diastolic grade 3 murmur heard best along the left border of the sternum in the second and third interspaces, not transmitted. The second aortic sound was accentuated. There was no thrill or friction rub. Motion was limited at the left hip but tenderness was more over the ischeal tuberosity and lower gluteal area than over the hip joint. Petechia were present in the right sub ocular conjunctiva and on the left in the conjunctiva covering the superior tarsal plate.

Laboratory Studies were as follows: 5 blood cultures positive for alpha streptococcus. Sensitive to penicillin and Aureomycin. WBC 15,700, 7% bands, 71% neutrophiles; 21% lymphocytes and 1% eosinophiles. Hgb. 12.5 gms sedimentation rate 26 mm. in 1 hour. Urea nitrogen 12.2 mg. per 100 cc. Urinalysis negative for sugar and albumin but containing 0-3 RBC/HPF and 2-4 WBC/HPF. Anti streptolysin titre 166 units.

X-rays of the chest revealed normal heart and lungs.

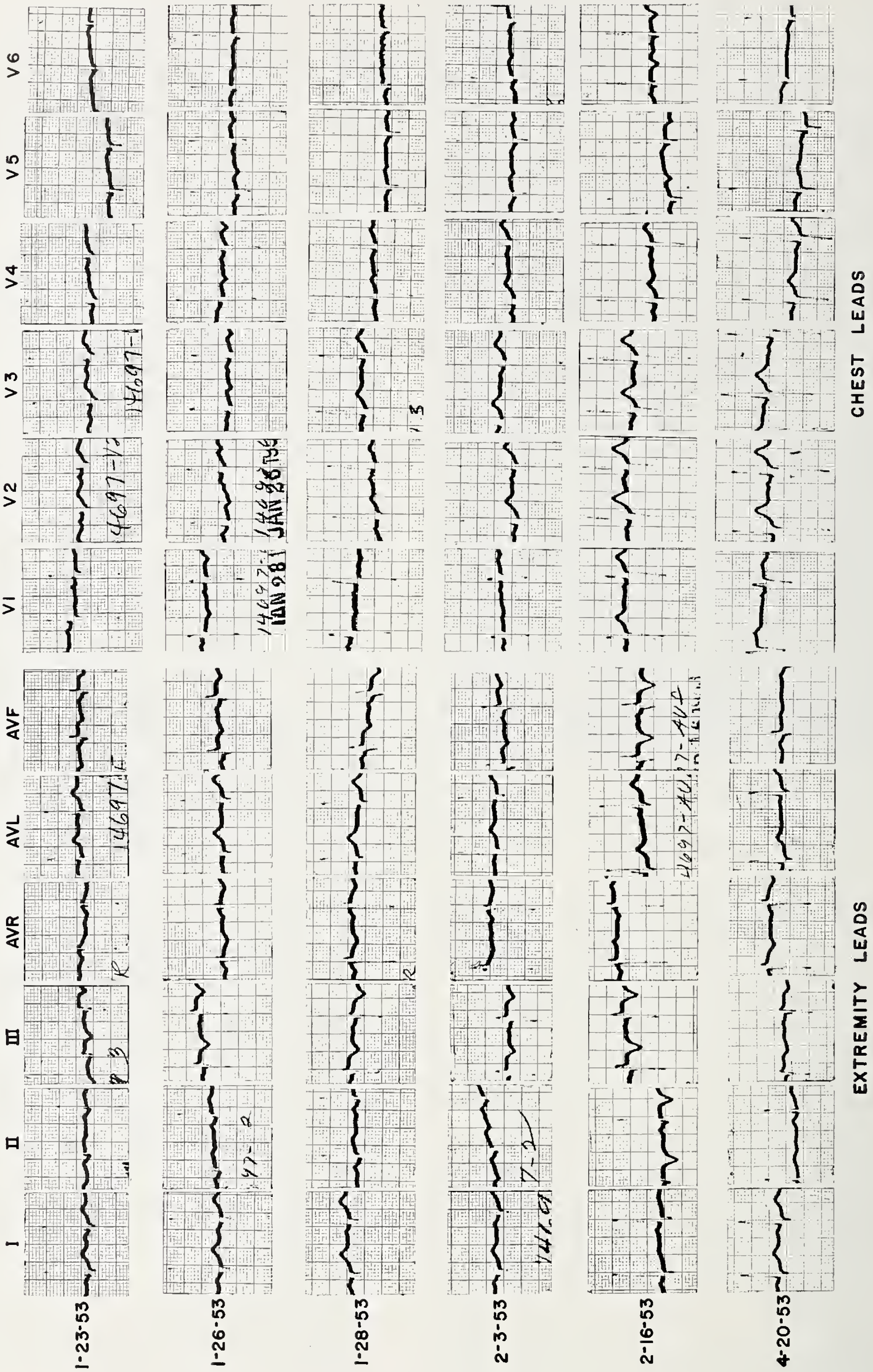
An *electrocardiogram* taken January 23, 1953, exhibited ST segment depression in Leads 1, AVL and V_1, V_2, V_3, and V_4 with elevations of the ST segment in Leads II, III, and AVF. T was diaphasic in II and frankly inverted in III and AVF, and isoelectric or slightly inverted in V_1, V_4, V_5, and V_6. A deep q wave was present in III with smaller q's in II, AVF and V_5 and V_6. Subsequent tracings taken over the next three months show the evolution and regression of a posterior lateral myocardial infarction.

Treatment consisted of bed rest supportive therapy and penicillin—0: one million units every three hours. After one week he was switched to penicillin—G in the same dosage

---

Dr. Hall, FACP, is Senior Physician, Wilmington Medical Center; Dr. MacGregor, FACP, is associated with the Washington Clinic, Washington, D. C.

CASE REPORT


I
II
III
AVR
AVL
AVF
VI
V2
V3
V4
V5
V6
1-23-53
1-26-53
1-28-53
2-3-53
2-16-53
4-20-53
EXTREMITY LEADS
CHEST LEADS

and was maintained on this for the next 5 weeks, without any reaction.

Course: On January 24th he awoke with pain in the right arm below the elbow and both radial and ulner pulses were found to be markedly diminished. He complained of no chest pain or shortness of breath at any time. Serial electrocardiograms were diagnostic of posterior myocardial infarction with q and deep inverted t in II, III, AVF. There was still ST segment elevation on February 16. He ran an intermittent low grade fever for the first 35 days following which he became afebrile and remained so. He was maintained on strict bed rest for the first six weeks and then ambulated slowly. The tenderness in the left gluteal region subsided and he regained full motion of the left leg. The aortic diastolic murmur remained unchanged. Repeated blood cultures were negative from the second week.

The following *diagnoses* were made: Subacute bacterial endocarditis of the aortic valve due to streptococcus viridans with embolization of the coronary artery, the right radial and ulner arteries and the left gluteal artery. Rheumatic heart disease with aortic insufficiency.

Follow-ups were obtained at one and a half and nine years. On both occasions he was well. He had returned to his former job as police officer and was receiving periodic check-ups from the Veterans Administration Clinic in Washington, D.C. He had taken up weight lifting as a hobby. In January, 1961, he had an anaphylactic reaction to penicillin with shock and cardiac arrest from which he fully recovered.

Discussion

There have been several excellent reviews on the subject of coronary embolism [1,3] attesting to the high mortality rate and the rarity of this complication. The difficulty of establishing a diagnosis other than by autopsy, may in part account for the few reported cases of survival. Hamman[4] reported a questionable case of a 34 year old woman who suddenly developed congestive failure following an acute respiratory infection. The absence of heart disease was fairly well established and the thought was that the embolus must have come from the infected lung.

Mussafia, in 1948, reported that a 24 year old woman with rheumatic heart disease and bacterial endocarditis had developed substernal pain concomitant with electrocardiographic evidence of an anterior wall infarction. Both of these patients survived the acute attacks and returned to their former activities. Wenger and Baufer[1] found bacterial endocarditis as the underlying cause in 47 of 74 cases reviewed. (63.6%)

The patient here had subacute bacterial endocarditis involving the aortic valve. Multiple embolization occurred. One involved the coronary circulation producing a posterior myocardial infarction. There was no significant degree of chest pain. The right arm and left gluteal pain may possibly have overshadowed them. Clinically this patient sustained a "silent myocardial infarction." Symptomless infarcts have been previously reported[6] and this led Glushein and Reiter to suggest that patients with bacterial endocarditis should have electrocardiograms taken frequently[7]. This case endorses their view point. The presence of a posterior infarction raises the possibility that this may have been a right coronary embolus. Although they are more frequent on the left[1] the mortality is lower on the right.[1]

Summary: A case of a 27 year old man with rheumatic heart disease, aortic insufficiency and subacute bacterial endocarditis with coronary embolus and recovery is reported. The patient is at present asymptomatic and employed full time as a detective. It is recommended that patients with bacterial endocarditis have frequent electrocardiograms during the period when they are having peripheral embolization.

REFERENCES

1. Wenger, N. K. and Bauser, S.: Coronary Embolism: Review of Literature and Presentation of 15 Cases. Am. J. Med. 25:549-557 (Oct.) 1958.
2. Shrader, E. L., Bawell, M. B., and Moragues, V.: Coronary Emolism, Circulation 14:1159 (Dec.) 1956.
3. Brunsin, J. G.: Coronary Embolism in Bacterial Endocarditis. Am. J. Path. 29:689 (July-Aug.) 1953.
4. Hamman, L.: Coronary Embolism. Am. Heart J. 21:401 1941.
5. Mussafia, A.: Embolia Coronaria in Corso di Endocardite Batterica subacute. Cuore c Circolaz 32:91, 1948.
6. Garwin, C. F., and Work, J. L.: Coronary Embolism; Report of three cases. Am. Heart J. 18:747, 1939.
7. Glushein, A. S., and Reiter, M. D.: Coronary Embolism (Intra-Vitam Diagnosis) and Necrotizing Renal Papillitis: Case Report. Ann. Int. Med. 36:679, Feb. 1952.

PANCREATITIS DUE TO FAMILIAL HYPERLIPEMIA

CASE REPORT

Mark G. Cohen, M.D.

Recurrent attacks of acute pancreatitis warrant investigation of the systemic diseases which may catalyze the attack. Foremost are alcoholism and biliary tract disease. Less common entities are hyperparathyroidism, infectious diseases, drug induced (primarily cortisone and chlorothiazide), and familial hyperlipemia. Hyperlipemic induced pancreatitis should not be confused with the more common transient hyperlipemia occurring secondary to pancreatitis.

Familial hyperlipemia* is a metabolic disorder resulting in delayed clearing of serum triglycerides (neutral fat) following postprandial hyperlipemia.[1] This is frequently manifested by a turbid or creamy serum. Cholesterol and phospholipid levels are usually increased but to a lesser degree.

The purpose of this case report is to emphasize that the only systemic manifestation of familial (fat induced) hyperlipemia may be recurrent attacks of acute pancreatitis. Total lipid fractionation is necessary for the diagnosis as routine cholesterol levels may be within normal range. Strict dietary control of fats produces long remissions.

A 52 year old gas station manager was admitted to the Wilmington General Division in December of 1965 with abdominal pain and fever. He had been in good health until 4 weeks prior to admission when he noted recurrent dull aching in the left upper abdomen. He felt constipated and obtained partial relief with laxatives. Outpatient intravenous urogram and G.I. series were normal. The pain gradually subsided until the day of admission when it recurred with great severity, and involved the entire upper abdomen. Physical examination revealed blood pressure 124/90, pulse 90/min., temperature 100 degrees, moderate abdominal distension and epigastric rigidity. The provisional diagnosis of acute pancreatitis was substantiated by a serum amylase of 2550 units. Additional laboratory data: cholesterol 279 mg %, feasting sugar 82 mg %, calcium 9.8 mg %, lipase 1,4, electrolytes, urea nitrogen urinalysis, electrocardiogram, and chest x-ray were normal.

The initial cholecystogram showed no visualization but double dose of Telepaque revealed adequate visualization and contraction after a fatty meal. Routine therapy including I.V. fluids, Banthine, sedation, and antibiotics produced prompt improvement within 72 hours. He was discharged on a low fat diet and anticholinergics. In March of 1966, a second episode of pancreatitis followed some dietary indiscretion and alcohol ingestion. In April of 1966, a third admission for pancreatitis was substantiated by amylase elevations to 900 units. He flatly denied alcohol ingestion or variation from the diet. In August of 1966, he was re-admitted with abdominal pain, following a shrimp dinner the night before. Typical physical findings were as before, with temperature of 101F. Laboratory data: W.B.C. 12,000, with a shift to the left, cholesterol 270 mg %, bilirubin indirect 0.29, direct 0.17, amylase 630 units, blood sugar random 100

---

*Synonyms: Familial Hyperchylomicronemia, Idiopathic Hyperlipemia, Retention Hyperlipemia, Essential Familial Hyperlipemia.

Dr. Cohen is Senior Attending in Medicine, Wilmington Medical Center, Clinical Associate Professor, Temple University, Philadelphia, Pa.

mg %, calcium 9.7 mg % and 10.0 mg %, alkaline phosphatase 5.0 Bodansky units, BSP 13.5 % retention in 45 min. A.G.I. series and cholecystogram were normal. Within 48 hours the temperature returned to normal and the amylase was 97 units. The serum was noted to be creamy colored. Total lipid was 1560 (normal 430-670), cholesterol 250 mg %, phospholipids 244 mg % (normal 200-250), and triglycerides were 1066 mg% (normal 0-200). A glucose tolerance curve was completely normal. A repeat BSP, 2 weeks after discharge was 7% retention in 45 min., cephalin flocculation was negative. Stools for ova and parasites were negative. Duodenal drainage for cholesterol crystals was negative.

The family history was negative for premature vascular disease, periodic abdominal pain or hyperlipemia.

Since his discharge in August of 1966, the patient has remained pain free on a low fat diet and anticholinergics. His last total lipid value was: Total lipids 750, serum cholesterol 255 mg%, phospholipids 230 mg%, and triglycerides 265.

Discussion

Hyperlipemia may be classified clinically into:

1. Alimentary
2. Secondary hyperlipemia, as seen in nephrosis, diabetic acidosis myxedema, pancreatitis, pregnancy, and Von Gierke's disease.
3. Familial hyperlipemia.

Frederickson[1] and associates have further subdivided familial hyperlipemia into five distinct clinical entities based on their characteristic plasma lipoprotein abnormality on paper electrophoresis. The low density lipoproteins (as determined by ultra centrifugation) are primarily involved in the familial hyperlipemias and are divided into:

1. Beta lipoprotein
2. Pre betalipoproteins (very low density)
3. Chylomicrons

Type 1 familial fat induced hyperlipemia is defined by the presence of massive amounts of chylomicrons in the serum. On a normal diet these patients have low alpha and beta lipoproteins.

(The reader is referred to Frederickson's[1] extensive analysis of the subject). The basic disturbance in Type 1 familial hyperlipemia is a delayed clearance of triglycerides following postprandial hyperlipemia. Absorption of triglycerides from the intestinal tract occurs as chylomicrons which normally are promptly removed from the circulation by the hepatic cells. The triglycerides are split into free fatty acids and glycerol by the enzyme lipoprotein lipase, which is activated by heparin. There is evidence implicating a deficiency of lipoprotein lipase in Type 1, familial hyperlipemia. Following injections of heparin, normal individuals show a sharp fall in serum lipids, whereas postheparin lipolytic activity (PH-LA) is frequently deficient in hyperlipemic cases.[3,4]

Thannhauser[5] credits Speck with the first description of lipemia and colicky abdominal pain in 1865. Since then numerous reports of pancreatitis, hyperlipemia, and xanthomatosis have appeared[6,8] Klatskin and Gorden[9] hypothesized that the pancreatitis was caused by vascular occlusion with clumped lipid particles, but pathologic proof was not available.

The clinical picture of familial hyperlipemia Type 1 is varied. The total spectrum includes periodic abdominal pain, fever, pancreatitis, cutaneous xanthomatosis, xanthelasma, and lipemic retinalis. Foam cells (large histiocytes laden with lipids) may be detected on bone marrow or liver biopsy. Hepatosplenomegaly may develop in the adult but is more common in the juvenile from (Burger-Grutz syndrome). Hyperglycemia and glycosuria occurring transiently during an attack of pancreatitis must not be confused with uncontrolled diabetes mellitus. Although Type 1 hyperlipermics usually present clinically before age 10, the disease may present with symptoms of an acute abdominal crises in an adult, as typified in this case. The disease may be discovered accidentally by observing a milky or lactescent serum in an asymptomatic individual. Although attacks of abdominal pain are usually preceded by excess fat ingestion they may occur when the diet has been restricted and little hyperlipemia is present. In Type 1 fat induced hyperlipemia, an abnormal glucose tolerance and premature arteriosclerotic coronary and peripheral vascular disease which characterizes other familial hyperlipoproteinemia is distinctly absent. Chylomicrons do not appear to have the propensity for atherosclerosis as do the pre beta lipoproteins.

No routine laboratory studies are diagnostic of Type 1 fat induced hyperlipemia. The transient BSP retention in this case report has not been consistently noted. Total lipid fractionation and paper electrophoresis clearly define the disorder.

The favorable influence of a low fat diet has been shown repeatedly in this disease. However, Fredericks points out that severe restriction of fat is impractical and probably undesirable because the high carbohydrate diet necessary for caloric intake may stimulate hyper-prebetalipoproteinemia. The latter is implicated in atherosclerosis. Thus fat intake, 25% of caloric intake, appears justifiable.

Summary

A case of recurrent pancreatitis due to familial (fat induced) hyperlipemia is presented. Creamy serum prompted total lipid fractionation demonstrating high triglycerides and essentially normal cholesterol levels. Other clinical evidence of hyperlipemia was lacking. The patient remains symptom free on a low fat diet. Total lipid fractionation is indicated in all cases of recurrent pancreatitis of obscure etiology. Unnecessary laporatomy may be avoided.

REFERENCES

1. Stambury, J. B.; Wyngaarden, J. B.; Fredrickson, D. S.: The Metabolic Basis of Inherited Diseases, p. 429.
2. Gailitis, R. J. Schrieber, W. Idiopathic Hyperlipemia: Special reference to abdominal and coronary symptoms. A.M.A., Arch. Surg., 679:40-44, 1959.
3. Havel, R. J., Gorden, R. S., Jr.: Idiopathic Hyperlipemia: Metabolic studies in an affected family, J. Clin. Invest., 39:1777, 1960.
4. Sklarin, B. S., Seegers, W., Hirschhorn, K.: Hyperlipemia. Geriatirics, 16:374, 1961.
5. Thannhauser, Siegried J.: Lipidoses. PP 291, 3rd Ed 1958.
6. Collett, R. W., Kennedy, R. L. J.: Chronic relapsing pancreatitis associated with hyperlipemia in an eight year old boy; Proceed. Staff Meet. Mayo Clinic, 1948, XXIII, 158.
7. Poulsen, H. M.: Familial Lepaemia; A new form of Lipoidosis showing increase in neutral fats combined with attacks of acute pancreatitis. Acta. Med. Scandinav., 138, 4B, 1950.
8. Kinsell, L. W., Michaels, G. D., Walker, G., Splitter, S. Visi Ntine, R. E.: Studies of patients with hyperglyceridemia. Amer. J. Clin. Nutrition, 9:1-12, 1961.

CLINICAL NOTICES AND MEETINGS

A workshop on biochemical approaches to clinical pharmacology will be held June 12-16 at the Vanderbilt University School of Medicine in Nashville, Tennessee. It will be jointly sponsored by the Drug Research Board of the National Academy of Sciences, Vanderbilt University School of Medicine and the PMA Foundation.
For Application forms write: John A. Oates, M.D., Director, Division of Clinical Pharmacology, Vanderbilt University School of Medicine, Nashville, Tenn.

Denver, Colorado, will be the site for the Rocky Mountain Cancer Conference on July 14-15 at the Brown Palace-West Hotel. For further information, write: Rocky Mountain Cancer Conference, 1809 East 18th Avenue, Denver, Colorado 80218.

ACP will present *Current Physiological Concepts in Diagnosis and Treatment,* June 12-16, 1967, at the University of Cincinnati College of Medicine, Cincinnati, Ohio. Meeting Place: Mont Reid Pavilion, Cincinnati General Hospital.
On June 19-21, 1967, ACP will present *Clinical Applications — Recent Advances in Pharmacology* to be held at the Auditorium, College of Pharmacy, University of Iowa, Iowa City, Iowa.
Fee: Members $60; Non-members, $100. For registration or information, write: Edward C. Rosenow, M.D., Executive Director, ACP, 4200 Pine Street, Phila., Pa. 19104.

President's Page

PHYSICIAN INVOLVEMENT IN HEALTH FACILITY PLANNING

The physician must be prepared to make the decision that area-wide planning is an endeavor of merit that will enhance the quality of care and breadth of services rendered to the community the organization serves.

This involvement means the physician must respond and accept basic responsibilities. He must recognize that he is a part of the process, not an interested bystander. We must begin to accept the concept of "we" when we refer to planning rather than "they".

Let us view planning — determine what it is, what it consists of — review the question of the merits of physician involvement — and physician responsibilities in the planning process. The purpose of planning is to develop a long-range flexible program to provide for the optimum health needs of the people of the region, assuring the optimum utilization of personnel, services, and facilities.

In planning, flexibility must exist or the concepts of today will not survive the stresses and pressures of tomorrow. We, as physicians, strive for precision and an orderly approach to problems. However, we, more than any other group, must realize that change is the business of the day in the field of health and it occurs swiftly and sometimes unexpectedly.

I have stated that physician involvement in health facility planning is desirable. Let's look at it from another posture. Can health planning meet its purpose without involvement of physicians? The answer to that question is a categorical "No". Planning in order to succeed must, by its nature, open new concepts — and the keys to these concepts are physicians. Community needs then should be our objective.

We must accept the fact—our primary responsibility is to the community. We cannot become the spokesmen for a particular hospital, or specialty, or county medical society, or state, or national group. The involvement of the physician on the long-range planning committee of the hospital presents meaningful opportunities. This position offers the physician the opportunity to become a guiding force in the program of the institution and how it will affect the care provided to the community. Active and objective participation is essential at the hospital level.

We cannot function simply as observers to report action to a specialty group or to a medical society. Physicians formerly have become involved in planning only after much of the programing has been accomplished. We are now beginning to see more and more physician activity earlier in the process. Our approach must be objective and related to the needs of the community, or our voice will not be heeded and we will have relinquished our position of responsibility. We must not by our action, suggest that our voice is the only voice meriting the attention of the community. We must recognize there will be times of honest differences and recognize that involvement of physicians, the administration, and community is what makes the planning process a vital force within the community.

If the voluntary planning process is to succeed, as it must (for in the wings stands compulsory planning) we physicians must be actively involved. We must openly discuss planning and educate ourselves and our colleagues regarding the need for planning.

One last point. Much of what we have accomplished in the medical profession, as in the country generally, has been the result of the basic American spirit of competition. I would urge you to maintain that competitive edge, yet direct the objective toward accomplishing the best job of planning for community needs in relation with other institutions. Let us compete, not to perpetuate yesterday, but rather to squarely meet tomorrow's challenge.

H. Thomas McGuire

WHY WAIT?

DIABETES DETECTION 1966-1967

The Delaware State Board of Health and Delaware Diabetes Association conduct a yearly campaign for the diagnosis of early diabetes in Delaware. During the past year 1659 cases were examined.

At the Wilmington Armory in November, 1966, 1168 cases were examined by the DDA using the high risk method of screening. No applicants, 12 years of age or over, were turned down. Histories were taken of all applicants in order to determine high risk cases.

A high risk case would fall into one of the following five categories:

1. 40 years of age and overweight
2. a blood relative
3. abnormal pregnancy
4. mother of a baby weighing 9 pounds or more
5. a person who has high blood pressure, heart disease or circulatory disorders

Total Exams—1168

- (A) 102 were 130 mg. or over by Dextrostix Method (8.733%)
- (B) These 102 applicants were given venous blood sugars (auto-analyzer) and 58 were found positive (over 120 mg.) and considered to be newly discovered diabetics (4.964%).

In order to obtain a pure percentage of diabetes mellitus in follow-up cases, it would be necessary to give a glucose tolerance test to each one of the 58 cases. Research funds and perhaps the permission of the family physician would also be required.

High risk screening can be used in a doctor's office or clinic following the above procedure of history taking and testing. This is essentially a pre-identification technique and opens up a vista for early diagnosis of other diseases besides diabetes mellitus. All sugars should be taken two hours after a moderate well balanced meal, high in carbohydrates.

High risk screening is essentially "good history taking" and emphasizes again the importance of an adequate history in diagnosis. This method must be accelerated.

Starting June 14, 1967, a *year round* detection program will be initiated as a co-operative effort of the Delaware Diabetes Association and the State Board of Health with the assistance of the Ames Company of Elkhart, Indiana.

This program is entitled "Why Wait." The Dextrostix Testing Method will be used.

Tests will be conducted at the following centers throughout the State of Delaware on a weekly basis:

Wilmington Medical Center, Wilmington General Division
Beebe Hospital, Lewis
Milford Hospital, Milford
Nanticoke Hospital, Seaford
Kent General Hospital, Dover
Newark Medical Laboratory, 327 E. Main Street, Newark
Brandywine Laboratory, 1806 N. Van Buren Street, Wilmington
Professional Clinical Labs., Suite No. 27, Professional Bldg., Augustine Cut-Off, Wilmington
Naamans Professional Laboratory, 2018 Naaman's Road, Wilmington
University of Delaware Student Health Dept., Newark
New Castle Physicians Lab., 702 Delaware Avenue, New Castle (after July 1)

All testing centers open Wednesday, 1-3 p.m., for testing.

Delaware Academy of General Practice

STATE OFFICERS CONFERENCE, AMERICAN ACADEMY OF GENERAL PRACTICE

The impact of newer Medicare legislation, insurance programs, retirements, and other items of direct interest to all states was discussed at the AAGP Conference held in Kansas City, Mo., in April.

Dr. Kowalewski, Chairman of the Board of Directors, briefly reviewed the progress that Family Medicine has made since the inception of the AAGP. He stated that this progress will soon fall by the wayside unless newer or more imaginative avenues are explored. The concept of continued medical education which has been fostered by AAGP, and is indeed a requirement for recertification, has greatly increased the scope of medical knowledge of today's general physician. The vastness of scientific material available to us today is more than can challenge the mind of any physician who depends on reading to keep up to date—it requires formal reeducation at closer and closer intervals of time. These ideas have lead to the formation of a long range planning committee of the AAGP, and one of their prime projects is to set up a department of research within the scope of AAGP, but as a complete and independent unit. This project would be run by highly qualified persons on a national level, to encompass as many of the nearly 30,000 members as possible. The types of research that could be carried on are almost overwhelming. For example: 1. Stresses in the family situation and their effects on the members of the family; 2. The relationship of medicine in the economic, social and environmental status of the family and how the family physician is expected to assist in such matters; 3. The epidemiology of illness from the point of view of the total family concept; 4. The interplay of religion, sociology and medicine in the creation and the solution of problems of morality and its effect on the family structure.

Of course the magnitude of this project is enormous. At present, only the basic planning is taking place; but the idea that such computerized medical research is truly possible must stimulate the imagination of all physicians.

In his address, Dr. Witten reviewed the progress that has been made towards board certification in Family Medicine. The preliminary applications have already been submitted to the AMA and the questions of how, when, where, and by what means have been answered by the Academy. The AAGP Commission on Education has worked out a program for residency training, that fills the requirements of the CORC Committee. The amount of time in this three year residency program that would be spent in Medicine, Surgery, Psychiatry, Pediatrics, Ob-Gyn and electives has been carefully allotted to fill the needs of any physician interested in doing Family Medicine in any part of our country.

Residency eligible candidates would be one group applying for certification. The others would be practice eligible candidates. These would not be limited to physicians that are engaged in General Practice at the present, but rather to anyone who desired and could fulfill the requirements. However, these candidates would have to have completed 300 hours of post graduate study (as described in the present AAGP requirements for recertification) before they would be eligible to take the examinations for board certification. Furthermore, this provision for application will terminate about 1975. It is contemplated that the examinations will last about two days and will be of the type given by the National Board of Medical Examiners. The finer details of weighing the various divisions of General Practice for applicants from different parts of the country have not been completed as yet. However, there would be a requirement for reboarding every five or six years. It is also felt that the first examination will be about July, 1968.

Much was accomplished at this SOC Conference and the coming year will indeed be a challenging one.

Henri F. Wendel, M.D.

The Physician and The Pharmacist

A monthly feature of the Delaware Pharmaceutical Society

AUTHORIZATION FOR PRESCRIPTION REFILLS

Prescription refills and authorization for such is a topic in need of much investigation and clarification by medicine and pharmacy. An aspect of this topic which I would like to discuss is the problem that arises when obtaining authorization for prescriptions when the physician's office is closed.

Regarding the legal aspects of refilling prescriptions, the law is quite explicit in stating that no prescription for a dangerous drug may be refilled. Thus, any prescription for a legend drug, whether it be thyroid or amphetamine must be authorized by the physician before it is refilled. Ordinarily this presents no problem except a phone call to the physician's office. Where problems begin, however, is on the weekends, evenings or the physician's day off. No pharmacist enjoys disturbing a physician during his time off to obtain authorization. But in many cases, it may be necessary. It is quite disturbing, therefore, to hear from the telephone exchange that the doctor does not take pharmacy calls outside of office hours. In this situation we are forced to refuse the patient his medication which in some cases may indeed be disastrous; break the law and refill the prescription without authorization, or else give the patient enough medication until the authorization can be obtained. Quite obviously, none of these alternatives are entirely satisfactory. The latter alternative is inconvenient for both the pharmacist and the patient because it involves filling the prescription twice, besides requiring an additional visit to the pharmacy for the patient or an extra delivery for the pharmacy. Another difficulty inherent in this last alternative is that in many cases unnecessary harm can come to a patient who receives any medication at all, even if it is only until the physician can be reached in the office.

Difficulty is encountered also when one physician is taking calls for another. He may often be totally unfamiliar with the patient and his case, and yet he must authorize medications for that patient. Although satisfying the letter of the law, this method in no way pretends to fulfill the spirit of the law. The weakness of this system is amply demonstrated by individuals who successfully obtain narcotics under false pretenses.

This, therefore, is the problem. The physician does not like to be bothered with authorizing prescriptions on his time off. Certainly this is a valid position, and no one would argue the fact that doctors need their relaxation. On the other hand, both the physicians and the pharmacists are the servants of the public. The public pays us a fee for our services and expects these services to be available at all times. As a result, the pharmacist is often caught in the middle. Several remedies would reduce, but not eliminate, the calls a pharmacist must make to the physician. Namely, the physician can indicate a specific number of times he would like a prescription refilled before he is called for authorization. This would cut the number of calls made to the office by a significant amount and save time and money for all concerned. This procedure is not legal for narcotics, however. Secondly, the patient should be educated by both physician and pharmacist that refills should be requested during office hours only. Many physicians have a statement printed on their prescription blanks to this effect. Even so, a mere printed statement is too often inadequate because people ignore or fail to read it. The physician must verbally make this request on issuing prescriptions. The pharmacist, in the same manner, can play a role in the education of his patrons. It is good practice for the pharmacist to inform the patient that refills should be sought when the doctor is in his office for the obvious reasons of convenience, speed and economy.

Another remedy for this problem would be to change the law. To this point, action is being considered to reclassify drugs from the present two classes (prescription and non-prescription) to four classes. The four classes would be (1) those drugs requiring a prescription and authorization for refill, (2) those which would require a prescription originally, but be refilled at the discretion of the pharmacist for a limited period of time. (3) those drugs which could be obtained only from a pharmacist, and (4) those drugs which could be obtained anywhere. It is hoped that this legislation will receive the support of medicine, for it will do much to clarify some of the problems which plague both professions.

DRUG INFORMATION ABSTRACTS

This is the first of a monthly series of drug information abstracts gathered from current articles and prepared by the pharmacists with the purpose of alerting you on various drugs and/or their complications.

Oral Zinc Sulfate To Accelerate Wound Healing

After the accidental discovery that zinc in the diet of animals resulted in an increased healing rate of thermal burns and excised wounds, zinc therapy has now been shown to produce similar effects in man. The present study was conducted on young, healthy subjects who had undergone surgery for the excision of polonidal-sinus tracts. Zinc sulfate, U.S.P., 220 mg. t.i.d. by mouth was administered during the period of repair. Controls were matched both by age and wound volume. An average of 80 days was required for healing of the control group while the test group required only an average of 46 days. The healing rates were nearly three times greater in the treated group. Larger wounds were found to heal some 43% sooner with the orally administered zinc sulphate. No toxic effects were observed with the use of this dosage over periods ranging from 43 to 61 days. Other clinical investigations failed to disclose signs of toxicity when zinc sulphate was continued for periods up to 22 months.

Lancet, Jan. 21, 1967.

Diabinese-Severe Hypoglycemia

All sulfonylurea drugs have at times been responsible for severe hypoglycemia, through Diabinese (chlorpropamide-Pfizer) has most often been to blame. In the present case a despondent 17-year-old girl took twenty to thirty 250 mg. tablets Diabinese. Seventeen hours later the patient was hospitalized in coma. Attempts to elevate the blood sugar were unsuccessful until glucagon was given in addition to glucose. Sulfonylurea drugs are known to inhibit release of glucose from the liver. Glucagon, on the other hand promotes the release of glucose from the liver, an action not consistently impaired by sulfonylurea drugs. It seems advisable to give glucagon in all cases of severe hypoglycemia induced by such drugs.

Davies et al. (Shotley Bridge, Co. Durham), Lancet 1:363 (Feb. 18, 1967).

Apresoline-Lupus Erythematosus

Many drugs are known to induce a syndrome resembling systemic lupus erythematosus. Apresoline (hydralazine-Ciba) seems to have a special propensity in inducing this reaction. Of 32 hypertensive patients treated with Apresoline, 14 developed a lupus-like syndrome. All had antinuclear antibodies which persisted in some patients for as long as nine years after the last exposure to the drug. Four of 15 Apresoline-treated patients who showed no clinical evidence of drug toxicity also had antinuclear antibodies. Early reports indicated that the toxic effects of Apresoline subside when the drug is withdrawn. More recently, symptoms and positive L.E.-cell tests have been reported to persist long after treatment when the drug is stopped. Persistence of antinuclear antibodies observed in the present series of cases adds to the list of long-term changes apparently induced by Apresoline.

Condemi et al. (Rochester, N. Y. & St. Louis, Mo.), New England J.M. 275:486 (Mar. 2, 1967).

In Brief

Personal Glimpses

A. Yvonne Russell, M.D., Dover, was recently elected a Fellow of the American Academy of Pediatrics, effective March 29, 1967 . . . Joseph W. Abbiss, M.D., Wilmington, was admitted as a Resident Fellow of the College of Physicians of Philadelphia at a meeting of the College held March 15, 1967 . . . William O. LaMotte, Jr., M.D., Wilmington, member of the AMA Committee on Communications, chaired the discussion at the annual meeting of the Delaware Association of Medical Assistants, May 13, 1967, at the Delaware Academy of Medicine . . . John M. Levinson, M.D., spoke at the Community Forum of the First Unitarian Church in Sharpley, on the topic, *Napalm and Viet Nam* . . . Ali Z. Hameli, M.D., has been appointed a Steering Committee member of the newly formed National Association of Medical Examiners . . . Mr. Richard R. Griffith, formerly Special Assistant to the Administrative Vice-President, Wilmington Medical Center, is now Executive Director, Association of Delaware Hospitals, Wilmington, effective May 15, 1967 . . . Allston J. Morris, M.D., will speak June 9, 1967, on *The Geriatric Patient* for Manpower Training Center's course, "Home Attendance," at Howard High School . . .

Speakers On "Ask The Doctor"

Speakers for June, 1967, on the Tuesday Radio Program, (11:05 a.m., WDEL) produced by the Medical Society of Delaware are: June 6, Richard Raiber, M.D., *to be announced;* June 13: Philip L. Rothbart, M.D., *Heat Prostration;* June 20; Theodore B. Strange, M.D., *Scoliosis;* June 27, James J. Gallagher, M.D., *Urological Differences in Age Groups.*

Seaford Seminars

The Lecturer-Consultant program, sponsored by the Medical Society of Delaware under the directorship of Leonard P. Lang, M.D., is held at the Nanticoke Hospital at noon. The next lectures are: May 18: Robert L. Meckelnburg, M.D., *Isotope Scan Procedure;* June 8: Leonard P. Lang, M.D., *Chronic Bronchitis and Emphysema.*

Speakers Sex Education

Member physicians who were recent speakers on the Sex Education Program being sponsored by the Public Relations Committee of the Medical Society of Delaware are as follows:

March 16, 1967	Verna Stevens-Young, M.D. 8:00 P.M.
March 21, 1967	David A. Levitsky, M.D., Walnut Street YMCA 12:00 Noon
March 22, 1967	Sarah Bishop, M.D., Pleasantville School PTA 8:00 P.M.
April 11, 1967	Marjory J. McKusick, M.D., Forestal School PTA 8:30 P.M.

Explorer Post 530

The Boy Scouts of America have a program called Exploring. These specialty posts are basically for students, in their junior and senior years in high school, who are interested in examining career opportunities in various fields. Sponsored by the Medical Society of Delaware, Post 530 is the first medical Explorer Post to be organized in Delaware. Post advisors are John H. Furlong, Jr., M.D., and Jack Zahn, M.D.

Your Doctor Fund

Under the heading, "How Doctor Funds Weather the Storm," *Medical Economics* (May 1, 1967), has this to say: "Like most others, the investment funds designed to provide retirement income for participating physicians lost ground in the 1966 market decline. None of the 17 listed here ended the year with a per-share decline nearly as severe as the 19% registered by the Dow-Jones Industrial Average." The Medical Society of Delaware, listed among the 17 investment funds, showed a loss of 6.0.

Official Medical Tour

A special medical tour of the Soviet Union, officially sponsored by the Ministry of Health of the U.S.S.R., has been arranged in connection with the 2nd International Symposium on Medical Treatment in Spas and Physiotherapy, Moscow and Caucasus, September 4-15, 1967. Participation is open to all members of the medical profession, regardless of their specialty. Arrangements in the Soviet Union are on a first-class basis; all-inclusive cost of the tour is $865. For further information, contact: Compass Travel Bureau, Inc., 55 West 42nd Street, New York, N.Y., 10036.

Cardiology Fellowship

An intensive training program in Cardiology is being offered by the full time staff of the Institute for Cardiovascular Diseases, Good Samaritan Hospital, Phoenix, Arizona. The program is supported in part from funds from the NIH, Arizona Heart Association, Southwest Medical Foundation and the American College of Cardiology as sponsor. Stipend is $7,000. For further information, write: A. Benchimol, M.D., Director, Institute for Cardiovascular Diseases, 1033 E. McDowell Road, Phoenix, Arizona 85002.

The Month In Washington

At a Senate Armed Services Committee hearing on S.1432 which would provide for a four-year extension of the present draft law expiring June 30, the AMA proposed that Congress set up a National Commission on Health Resources and Medical Manpower with broad powers to supervise the drafting of physicians for military service. Some AMA recommendations for modification of the doctor draft program include:

- Expansion of the physician draft pool to include women doctors.

Drafting For Military Service

- Making subject to draft call, foreign physicians under 35, with permanent visas or who subsequently become citizens, and who may not be subject to call because they were not deferred from induction while under age 26.

- Limiting credit for fulfillment of the draft obligation, only to service performed in the armed services. (Under the old law, service in the PHS could satisfy a physician's obligation for active military duty.)

- Routine transfer, upon completion of an internship, of the jurisdiction of physicians to the local draft board serving the area in which the physician is engaged in training or practice.

- Changes in the pay and promotion policies for military physicians designed to increase the retention of career military physicians.

Foreign Medical Graduates

The AMA's position on graduate medical education continues to be that of encouraging graduates of foreign medical schools, who come to the United States for training, to return to their home countries where their skills are so badly needed. It is suggested that the five-year length of stay provision for physicians on exchange programs be reconsidered.

Traffic Accidents

Tentative standards for emergency medical services provided for persons injured in traffic accidents have been announced by the National Highway Agency. The federal standards give the states broad authority in implementation and are also subject to comment by the states before they become final. The federal standards would require states to:

- Appoint a full-time medical emergency services coordinator to have primary responsibility for the program.
- Prepare a comprehensive plan for emergency services throughout the state.
- Establish training, licensing and related requirements for ambulance drivers, attendants and dispatchers.
- Coordinate ambulance and other emergency medical care systems, including the requirement of ambulances to carry two-way radios hooked up with the police and hospitals.

The state programs must be in full operation before January 1, 1969, or a state could lose up to 10% of its allotted federal highway construction funds.

Out-of-Town Speakers At Local Meetings

WILMINGTON MEDICAL CENTER

Pediatric Conference — **12:00 noon** — **Delaware Academy of Medicine**

Friday, June 2 — Natalia P. Chanapis, Ph.D., Johns Hopkins University School of Medicine, *Reading Disorders in Children.*

Friday, June 23 — Edward M. Sewell, M.D., Assistant Professor of Pediatrics, University of Pennsylvania School of Medicine, *Atypical Microbacteria.*

Surgical Conference — **8:30 A.M.** — **Delaware Division**

Saturday, June 17 — William B. Kiesewetter, M.D., Surgeon in Chief, U. of Pittsburgh School of Medicine, Children's Hospital, *GI Bleeding in Infants and Children.*

Medical Conference — **8:30 A.M.** — **Delaware Academy of Medicine**

Tuesday, June 6 — Captain Samuel L. Moschella, M.D., Dept. of Dermatology, Philadelphia Naval Hospital, *Vasculitis.*

Tuesday, June 13 — Harvey G. Kemp, Jr., M.D., Instructor-in-Medicine, Peter Bent Brigham Hospital, *An Evaluation of Coronary Angiography.*

Auxiliary Affairs

AN IDEA FOR A WORTHWHILE AUXILIARY PROJECT

What Can We Do For Lonely Mr. Brodsky?*

"There is old Mr. Brodsky sitting in that chair near the window. We see him there every day—all day—neatly dressed with his hair combed. He likes to watch the children playing on the sidewalk. They probably remind him of his only son who died when he was very young. His wife died two years ago and since then he has been alone. We secretly wonder how he gets his meals, but apparently he manages. Of course, since he had his stroke, he really can't go out. He needs a friend—someone who can bring him back into the community in which he used to be so active.

In the area where Mr. Brodsky lives, the friendly visitor training course is being sponsored by the medical auxiliary, the Council on Aging, the Council of Social Agencies and other community organizations which recruit volunteers to visit homebound, elderly, and handicapped people. The auxiliary has assumed responsibility for teaching a course and providing equipment, publicity, and follow-up. There are numbers of people who are also lonesome and need something constructive to do such as bringing cheer to homebound people like Mr. Brodsky. If you have an elderly relative at home, just sitting alone, you understand what we mean.

The training of these volunteer friendly visitors is one of the direct service projects suggested to county auxiliaries. The goal is to assure every physically handicapped and/or older person that he has within his reach, services he needs for a fair chance at the best life for which his mind, soul, and body equip him.

The advent of Medicare and the extension of welfare benefits through Title 19 have tremendously increased the demand for health services—the very services our physician husbands need to augment care for their patients. The patient will require and demand services to enable him to move from hospital to nursing home and back to his home again.

One can just imagine the older patient saying to his doctor, "I want to go home but I can't go home because you say that I must have a homemaker service because I am not able to prepare my own meals and these services are not available in our community.

The point is that if *we* do not provide these services on a voluntary basis, local governments will provide them through county welfare departments. While we have no quarrel with this, the fact remains that "homemaker service" through a public welfare agency does not serve the total community. What about those people that are not on welfare? In order to take care of them we may have to set up a second agency for the community to support. We feel that the auxiliary has a tremendous opportunity to start these services under voluntary auspices."

As a teacher of homebound students—some temporary and some permanently handicapped with a short life expectancy—I feel that this project could be extended to deal not only with the elderly but with these deserving, interesting, and often intelligent youngsters. It would be wonderful if teenagers could be trained to visit with other less fortunate ones in their own age group.

I can assure anyone who would take the time to visit with a high school student who is housebound and studies at home with one or two teachers that it would be justly rewarding for the time spent. There are limitless possibilities for bringing interest and color into the lives of these children.

JAYNE S. HUNTINGTON

---

*Condensed from *The Direct Line*, an AMA Newsletter for Leaders, Feb., 1967.

OFFICERS AND COMMITTEES 1966-1967

President, H. Thomas McGuire, M.D.
Vice-President, Emerson Y. Gledhill, M.D.
President-Elect, J. Leland Fox, M.D.
Secretary, Joseph W. Abbiss, M.D.
Treasurer, Lawrence Katzenstein, M.D.
American Medical Association — Delegate, H. Thomas McGuire, M.D. — Alternate Delegate, William O. LaMotte, Jr., M.D.
Delaware Academy of Medicine — Representative, Norman L. Cannon, M.D.
Blue Cross-Blue Shield, Inc. Trustees: Conley L. Edwards, M.D., William Cooper, M.D., Norman Jones, M.D., H. Thomas McGuire, M.D., Karl S. Russell, M.D., Allen H. Seeger, .MD.

STANDING COMMITTEES

Budget

*Lawrence Katzenstein, M.D.
Charles Allen, M.D.
Alfred E. Bacon, Jr., M.D.
James Beebe, Jr., M.D.
Charles Walker, Jr., M.D.

Program

*Robert L. Meckelnburg, M.D.
*H. Thomas McGuire, M.D.
Otakar J. Pollak, M.D.
Richard W. Tobin, M.D.
Arthur F. Zimmerman, M.D.

Publications

*Robert B. Flinn, M.D.
Joseph W. Abbiss, M.D.
Davis G. Durham, M.D.

Public Laws

*William O. LaMotte, Jr., M.D.
Rhoslyn J. Bishoff, M.D.
Christopher R. Donoho, M.D.
James E. Marvil, M.D.
William J. Vandervort, M.D.
Arthur F. Zimmerman, M.D.
Allston J. Morris, M.D.

SPECIAL COMMITTEES

Maternal Mortality

*John M. Levinson, M.D.
Charles L. Miller, M.D.
A. M. Devenis, M.D.
William A. Leitzinger, M.D.
Winfried L. Mroz, M.D.
John C. Rawlins, M.D.

Medical Economics

*Davis G. Durham, M.D.
J. Robert Fox, M.D.
C. E. Graybeal, M.D.
Pierre L. LeRoy, M.D.
Ignatius J. Tikellis, M.D.

Medical Scholarships

*Gordon Keppel, M.D.
Sveinbjorn Bjornson, M.D.
Edward S. Dennis, M.D.
J. Leland Fox, M.D.
Oliver A. James, M.D.

Medical School for Delaware

*James E. Marvil, M.D.
*Anthony C. D'Alonzo, M.D.
James Beebe, Jr., M.D.
Leonard P. Lang, M.D.
Charles Levy, M.D.
James T. Metzger, M.D.
Willard F. Preston, M.D.
Frank T. O'Brien, M.D.
Otakar J. Pollak, M.D.
Daniel J. Preston, M.D.
Howard Wilk, M.D.

Medical Service and Public Relations

*David A. Levitsky, M.D.
Alfred E. Bacon, Jr., M.D.
John W. Alden, Jr., M.D.
W. Phillip Portz, M.D.
Arthur F. Zimmerman, M.D.

Medical Review Committee

*R. Douglas Sanders, M.D.
Herbert M. Baganz, M.D.
Howard Wilk, M.D.
Harold S. Rafal, M.D.
Alfred E. Bacon, Jr., M.D.
Edgar R. Miller, Jr., M.D.
Leslie W. Whitney, M.D.
Robert W. Frelick, M.D.
Elton Resnick, M.D.
William B. Cooper, M.D.
Norman Jones, M.D.
Karl S. Russell, M.D.
Allen H. Seeger, M.D.
Conley L. Edwards, M.D.
H. Thomas McGuire, M.D.

Medicare Adjudication

*Sidney Stat, M.D.
Benjamin F. Burton, M.D.
Edward S. Dennis, M.D.
William R. Hazzard, M.D.
Oliver A. James, M.D.
Walter W. Moore, M.D.
Richard Raiber, M.D.

Medico Legal Affairs

*James T. Metzger, M.D.
Kurt Anstreicher, M.D.
S. Ward Casscells, M.D.
Leslie M. Dobson, M.D.
Martin Gibbs, M.D.
Robert M. Marine, M.D.
James R. McNinch, M.D.
Gerald J. Savage, M.D.
Pierre L. LeRoy, M.D.

Prepayment

*Lemuel C. McGee, M.D.
*R. Douglas Sanders, M.D.
Joseph W. Abbiss, M.D.
Olin S. Allen, II, M.D.
Joseph A. Arminio, M.D.
Conley L. Edwards, M.D.
John W. Barnhart, M.D.
Joseph E. Belgrade, M.D.
H. Thomas McGuire, M.D.
William B. Cooper, M.D.
Robert W. Frelick, M.D.
Richard C. Hayden, M.D.
Norman P. Jones, M.D.
William O. LaMotte, Jr., M.D.
John W. Maroney, M.D.
Elton Resnick, M.D.
Karl S. Russell, M.D.
Allen H. Seeger, M.D.
Harold S. Rafal, M.D.
Howard Wilk, M.D.

Religion and Medicine

*Thomas H. Hogshead, M.D.
John B. Baker, M.D.
Sarah Bishop, M.D.
Robert L. Dewees, M.D.
James J. Gallagher, M.D.
Richard H. Weiss, M.D.
Dewey Nelson, M.D.

School Health

*Edward F. Gliwa, M.D.
Sarah Bishop, M.D.
Robert W. Frelick, M.D.
Rhoslyn J. Bisholf, M.D.
Harry G. Neese, M.D.
John C. Rawlins, M.D.
William D. Shellenberger, M.D.

Utilization of Facilities

*William D. Shellenberger, M.D.
Pierre L. LeRoy, M.D.
Edgar R. Miller, Jr., M.D.

Venereal Disease

*Donald Schetman, M.D.
Winder L. Porter
Casimir Vileisis, M.D.
Raphael A. Zaragosa, M.D.

Aging

*Allston J. Morris, M.D.
John W. Barnhart, M.D.
Felix Mick, M.D.
Verna Stevens-Young, M.D.
Charles Strahan, M.D.
Henry V'P Wilson, M.D.

AMA-ERF

*Gustave K. Berger, M.D.
Joseph A. Elliott, M.D.
Robert B. Flinn, M.D.
Joseph F. Hughes, M.D.

Education

*Leonard P. Lang, M.D.
Jason L. Campbell, M.D.
John A. J. Forest, Jr., M.D.
G. Barrett Heckler, M.D.
Robert C. Kingsbury, M.D.
David Platt, M.D.
Rubin A. Teixido, M.D.

Grievance Board

*Williard F. Preston, M.D.
John B. Baker, M.D.
Albert Gelb, M.D.
Sylvester W. Rennie, M.D.

Advisory, Woman's Auxiliary

John W. Howard, M.D.
Harold J. Laggner, M.D.
Edward T. O'Donnell, M.D.
John M. Levinson, M.D.
Ignatius J. Tikellis, M.D.

Liaison with Delaware Chapter, American Cancer Society — Oscar N. Stern, M.D.
Liaison with Delaware Chapter, American Heart Association — Lemuel C. McGee, M.D.
Liaison with Delaware Chapter, American Diabetes Association — Herbert M. Baganz, M.D.
Liaison with Delaware Tuberculosis and Health Society — Gerald A. Beatty, M.D.
Liaison with Mental Health Association of Delaware — Herman J. Bennett, M.D.
Liaison with Child Diagnostic and Development Center — Henry Stroud, M.D.
Liaison with Vocational Rehabilitatin Commission — S. Ward Casscells, M.D.

WOMAN'S AUXILIARY TO THE MEDICAL SOCIETY OF DELAWARE

Mrs. John W. Howard, *President*
Mrs. Harold J. Laggner, *President-Elect*
Mrs. Edward T. O'Donnell, *Treasurer*
Mrs. John M. Levinson, *Corresponding Secretary*
Mrs. Ignatius J. Tikellis, *Recording Secretary*

NEW CASTLE COUNTY MEDICAL SOCIETY

R. Douglas Sanders, M.D., *President*
John W. Alden, Jr., M.D., *Pres.-Elect*
Robert L. Dewees, M.D., *Vice-President*
Marvin H. Dorph, M.D., *Secretary*
Alfred E. Bacon, Jr., M.D., *Treasurer*

Councilors: Chester R. Dietz, M.D., Frank T. O'Brien, M.D., Conley L. Edwards, M.D., Harry Taylor, M.D.

Delegates (1966-67): Leon V. Anderson, M.D., Patrick F. Ashley, M.D., Stephen W. Bartoshesky, M.D., Gustave K. Berger, M.D., William H. Duncan, M.D., Williford Eppes, M.D., William T. Hall, M.D., Lloyd B. Harrison, Jr., M.D., George L. Henderson, M.D., Catherine P. Johnson, M.D., Leroy R. Kimble, M.D., Gordon Keppel, M.D., William O. LaMotte, Jr., M.D., Alfred Lazarus, M.D., Samuel W. Lippincott, M.D., Edgar R. Miller, Jr., M.D., Stuart W. Rose, M.D., R. Douglas Sanders, M.D., Richard Weiss, M.D.

Alternates (1966-67): Olin S. Allen, II, M.D., Marvin V. Andersen, M.D., Alfred E. Bacon, Jr., M.D., Edward F. Becker, M.D., Joseph E. Belgrade, M.D., Robert S. Brennan, M.D., Thomas R. Brooks, M.D., Haynes B. Cates, M.D., I. Lewis Chipman, Jr., M.D., H. George DeCherney, M.D., Davis G. Durham, M.D., George N. Ericksen, M.D., Robert W. Frelick, M.D., Park Huntington, M.D., Warren R. Johnson, M.D., Allston J. Morris, M.D., Christos Papastavros, M.D., Robert E. Price. Jr., M.D., William J. Vandervort, M.D.

Delegates (1967-68): John W. Alden, Jr., M.D., Joseph A. Arminio, M.D., Herbert M. Baganz, M.D., John W. Barnhart, M.D., Edward M. Bohan, M.D., Italo Charamella, M.D., A. Henry Clagett, Jr., M.D., C. Anthony D'Alonzo, M.D., Joseph J. Davolos, M.D., Robert L. Dewees, M.D., Marvin H. Dorph, M.D., Edward F. Gliwa, M.D., Maurice Goleburn, M.D., G. Barrett Heckler, M.D., Robert D. Hunt, M.D., Leonard P. Lang, M.D.. Douglas W. MacKelcan, M.D., Edward S. Parvis, M.D., Winder L. Porter, M.D., William D. Shellenberger, M.D.

Alternate (1967): Howard Wilk, M.D. (For expired term of Doctor Dietz)

Alternates (1967-68) Herman J. Bennett, M.D., Donald C. Cameron, M.D., I. Favel Chavin, M.D., Howard D. Cohen, M.D., Christopher R. Donoho, M.D., James F. Flanders, M.D., Carl I. Glassman, M.D., Joseph A. Glick, M.D., Gerhard E. Hartenauer, M.D.. Pierre L. LeRoy, M.D., Daniel Lieberman, M.D., Robert L. Meckelnburg, M.D., Edwin A. Mekanik, M.D., McHenry Peters, M.D., Charles L. Reese, Jr., M.D., Charles S. Riegel, M.D., Donald Schetman, M.D., Charles W. Wagner, M.D., Dene T. Walters, M.D., Robert L. Wuertz, M.D.

Woman's Auxiliary

Mrs. Christos Papastavros, *President*

KENT COUNTY MEDICAL SOCIETY

Charles Allen, M.D., *President*
Richardson B. Glidden, M.D., *Vice-P.*
Winfried L. Mroz, M.D., *Sec.-Treas.*

Delegates: Norman P. Jones, M.D. - 1967, William C. Pritchard, Jr., M.D. - 1967, John A. J. Forest, Jr., M.D. - 1968, Rhoslyn J. Bishoff, M.D. - 1968.

Alternate Delegates: James M. Chase, Jr., M.D. - 1967, Arthur F. Zimmerman, M.D. - 1967, John J. Lazzeri, M.D. - 1968, E. Harold Mercer, M.D. - 1968.

Councilors: Edward S. Dennis, M.D., James R. McNinch, M.D.

Woman's Auxiliary

Mrs. William Leitzinger, *President*

SUSSEX COUNTY MEDICAL SOCIETY

Joseph A. Eliott, M.D., *President*
Daniel Alvarez, M.D., *Vice-President*
A. M. Devenis, M.D., *Secretary-Treas.*

Councilors: James E. Marvil, M.D., Robert Lewis, M.D.

Delegates: David Sills, M.D., Joseph Elliott, M.D., William Cooper, M.D., J. Leland Fox, M.D., W. Pierce Ellis, M.D., Laurence Fitchett, M.D.

Alternate Delegates: Harold Wilberg, M.D., Robert Kingsbury, M.D., Casimir Vileisis, M.D., Arthur Tormet, M.D., Carl Pierce, M.D., C. E. Graybeal, M.D.

Woman's Auxiliary

Mrs. Joseph Elliott

Delaware Medical Journal

JUNE, 1967

VOLUME 39

NUMBER 6

Editorial...

THE CASE AGAINST THE OSMOMETER

As medicine becomes more complicated and the wheels of progress turn, inevitably more tests and procedures become available.

It is difficult, if not impossible, for a busy clinician to critically evaluate every new procedure. Once an individual has reached his saturation point, he has to rely on the evaluation of others. In doing so, he runs the risk of utilizing laboratory determinations that are not always helpful or necessary.

A patient with acute anterior chest pain stands a good chance of not only having an electrocardiogram but also a WBC, Sed. rate, LDH, BDH, SGOT, and a CPK as supportive information for the diagnosis of a coronary occlusion. In retrospect, it would be difficult to defend more than half of these tests and if the EKG is diagnostic, perhaps none of the laboratory data is really helpful. Most clinicians are now well aware of the fact that many of the above tests measure essentially the same parameters and have eliminated the use of some of these tests after several years of experience with them.

Osmometry is another such test that probably could be eliminated as it rarely tells the physician anything that is not already known or at least easily calculated. The main clinical advantage of a serum osmolality lies in its simplicity and speed with which it can be done. Its value is as a single determination. If the serum osmolality is normal, the clinician can be reasonably sure that the serum sodium, BUN and blood sugar are relatively normal. If, however, one has already obtained a sodium, BUN, and a blood sugar, then the osmolality, which simply measures the gross sum of all osmolatically active constituents of the serum, is not necessary. An analogy would be the measuring of a sedimentation rate on a patient who is already known to be febrile and to have an elevated white count with a shift to the left.

The normal range for serum osmolality is from 285 to 295 miliosmoles /kg. Since the sodium is the major contributor towards the serum osmolality, most significant variations of serum osmolality will be accompanied by hyponatremia or hypernatremia; drug ingestions, elevated blood urea nitrogens, elevated blood sugars or urea include almost all other possible causes. If one multiplies the serum sodium concentration in mEq/liter by 2 and adds 7, he will roughly approximate the serum osmolality. Large variations in blood urea nitrogen and glucose can be accounted for by adding BUN/2.8 or glucose/18.

Urinary values may vary from 50 to 1400 miliosmoles and are paralleled by the specific gravity except when a significant quantity of glucose, albumin or drugs of large molecular weight are present. These substances will cause a greater effect in the specific gravity than in the osmolality. Specific gravity measures the weight of the constituent molecules, the osmolality measures the number of molecules. For most clinical purposes, the urine specific gravity is sufficient to differentiate a concentrated from a diluted urine and the osmometer can be left for the definitive diagnosis of diabetes insipidus and for the renal physiologist who requires greater precision. Errors in determining urine osmolality add to its problems because of the fact that when urine cools on standing, it develops a precipitate of phosphates, etc., and in doing so falsely lowers the osmometer reading.

In short, osmometry on serum is a gross non-specific screening device and on urine is more precise than needed. Why, then, should one need osmometry?

LOW DOSE THERAPY OF HYPERTHYROIDISM

• **Long term follow-up of cases of hyperthyroidism treated by radioactive iodine and clinical records of variations of the disease.**

U. P. Tezcan, M.D.
Robert W. Frelick, M.D.
Robert L. Meckelnburg, M.D.

Stimulated recently by several reports appearing in the literature, of a marked and progressive increase in the development of hypothyroidism following therapy with radioactive iodine, we undertook an analysis of the cases of hyperthyroidism treated in our laboratory over the past 12 years.[1,2] The advantages of radioactive iodine for the treatment of hyperthyroidism included the ease of administration, lack of toxicity, out-patient status, reduced cost as compared to surgery, and the freedom from surgical complications such as post operative hemorrhage, recurrent laryngeal nerve damage, or hypoparathyroidism.[3,4,5]

Aside from the theoretical hazard, at least to date, of the induction of cancer, leukemia, or other genetic change, the most serious drawback to radioactive iodine therapy has been the development of permanent hypothyroidism.[6,7] Previously, the theoretically correct dose of radioactive iodine was calculated from the uptake, estimated gland size, and the retention and energy of the isotope employed. The doses thus calculated were usually much larger than those we have administered in the treatment of this disease.

Our technique in administering radioactive iodine is to give initially what we feel is the minimum effective dosage to all patients and contemplate possible retreatment in 3 to 6 months. The minimal first dose has usually been in the range of 3 to 5 millicuries, tending to be towards the lower figure for smooth glands and the higher figure for nodular glands.

Our results indicate that neither original iodine uptake, concentration in the gland, nor classification as either diffuse or multinodular, seemed to influence the results of therapy in so far as selection of the original dosage is concerned. Of 120 patients who were followed over a 12 year period, only four of the 16 who became hypothyroid received two or more treatments. Also, the four individuals in the hypothyroid group who received only the minimal dosage were in no way different in their thyroid status at the time treatment was initiated as compared to the total group. As can be seen in Table No. 1, a slight majority of patients received less than 5 millicuries of radioactive iodine to bring them into the euthyroid state, while almost 90% of the patients who eventually became euthyroid received 10 or less millicuries.

There did seem to be a significant difference in the results of treatment among the different

---

Dr. Tezcan is affiliate, Department of Nuclear Medicine; Dr. Frelick is Director, Department of Medicine; Dr. Meckelnburg is Head, Section of Nuclear Medicine, Wilmington Medical Center, Wilmington, Delaware.

Morphology	*<5MC*	*5-10MC*	*10-20MC*	>20MC
Diffuse	36	30	9	2
Multi-Nodular	7	6	4	1
Toxic Nodule		5		
TOTAL	43	41	13	3

TABLE 1

DOSAGE PRODUCING EUTHYROID STATE.

clinical classifications of the gland. As can be seen from Table No. 2, the incidence of hypothyroidism in the multinodular group was 12.5%, whereas the incidence of hypothyroidism occurring in the diffuse group was only 6.7%. The group with the best results of all was the toxic nodular group, where a built-in safeguard of a normal, but suppressed, and therefore protected portion of the gland is able to be re-activated once the toxic nodule has been eliminated by radioactive iodine.

One significant factor in the end results was that of previous therapy with either antithyroid drugs or surgery. As can be seen in Table No. 3, there were a total of 49 patients who had prior drug or surgical treatment. Of this group 8 became hypothyroid and this represented 50% of the hypothyroid group, whereas the total number of hypothyroid subjects in this group represented only 13% of the entire study population. Thus, the choice of the correct treatment dose of radioactive iodine in the previously treated individual still seems to be a difficult problem. As can be seen from Table No. 4, the greatest number of patients became hypothyroid in the first two years. At first glance, it would seem that there was not a progressive rise in the incidence of hypothyroidism with time. However, when Table No. 4 is examined carefully, one can see that when the total number of hypothyroid patients is compared to the total number in the group at risk for the individual year, there is a progressive rise in the incidence of hypothyroidism reaching some 30% in those individuals followed for more than 5 years. Unfortunately, too few patients were treated beyond 5 years to have any statistical significance.

Although this study seems to indicate that the low dose regimen is ineffective in eliminating the one-in-three incidence of hypothyroidism at the ten year level of followup, radioactive iodine is still considered a preferred method of treatment. Surgical thyroidectomy still has a risk of serious complications and an appreciable incidence of hypothyroidism. Antithyroid drugs require prolonged cooperation on the part of the patient, and when finally stopped, usually after 12 to 18 months, have a relapse rate as high as fifty per cent.

We have also observed that some treated patients go through a period of temporary hypothyroidism which usually occurs in the first or second year. Although exogenous thyroid is usually given at this time, it can often be withdrawn later when the patient has re-

Morphology	*Euthyroid*	*Hypothyroid*	*Hyperthyroid*
Multi-Nodular 17	14	2(12.5%)	1
Diffuse 98	81	14(6.7%)	3
Toxic Nodule 5	5	(0%)	
TOTAL 120	100	16(13.3%)	4

TABLE 2

TREATMENT RESULTS

Previous Therapy	*Total*	*Euthyroid*	*Hypothyroid*
Drug	31	28	3
Surgery	8	7	1
Both Drug and Surgery	10	6	4

TABLE 3

RESULTS OF THERAPY IN PREVIOUSLY TREATED PATIENTS.

turned to a euthyroid state. Unfortunately, not all patients in this series were tested to see if they could do without thyroid replacement.

We have been able to control patients' symptomatology with drug therapy over several months while awaiting the full effect of the radioiodine on the thyroid gland. If even smaller dosages of radioactive iodine are to be employed in an attempt to avert future hypothyroidism, it is not unreasonable to expect that we can temporarily suppress the symptomatology of the hyperthyroid state for a sufficient time to allow a longer period of iodine administration.[2]

At present, the most important factor in the use of radioactive iodine for the treatment of hyperthyroidism is long term followup and study for the purpose of detecting and treating hypothyroidism early before any of its serious consequences can develop. Also, clinical and laboratory investigation of the treated patient is needed to bring to light those factors which determine the subsequent metabolic state, be it euthyroidism or hypothyroidism.

In order to emphasize some of the problems associated with the treatment and underline our philosophy of therapy, the following three cases are presented.

Case 1.

A 38 year old woman with a history of palpitations of three months' duration, increased appetite, with a weight loss of 6 pounds during the same period of time, plus increased nervousness and weakness, was seen with a PBI of 10.7 mcg %, a four hour uptake of I-131 of 25%, 24 hour uptake of 56%, and a T-3 of 36.4. The latter finding, although normal, was in the presence of Enovid, which is associated with a drop in level of T-3.

On examination, she was hyperkinetic and nervous, with a pulse of 120, and a blood pressure of 144/70. She had a tremor, with warm, moist palms. The thyroid was slightly enlarged, and the scan revealed diffuse hyperplasia. She was given 3 millicuries of radioactive iodine. Three months later, with a weight gain of two pounds, peri-oral numbness, muscle aching, intolerance to cold, constipation, fatigue, sluggishness and depression, plus swelling of fingers and toes, she was started on tri-iodothyronine (T-3). In spite of this, she complained of swelling of the eyes and headaches. These could be controlled with an increased dose, except for the development of tachycardia and palpitations. Because of the latter, she stopped the T-3. Ten months after therapy she developed increasing fatigue and needed to return to the T-3 at 25 micrograms

Year	*Total*	*Euthyroid*	*Hypothyroid*	*Hyperthroid*
1st	120	105	11(9.2%)	4
2nd	113	97	13(11.5%)	3
3rd	73	62	11(15.0%)	0
4th	45	36	9(20.0%)	0
5th	33	24	9(27.3%)	0
>5	20	14	6(30.0%)	0

TABLE 4

STATUS ACCORDING TO GROUP AT RISK PER YEAR FOLLOW UP.

per day. However, gradually the dose was reduced, but as this was done, down to 12.5 micrograms per day, mild exophthalmus was noted in the right eye. Eighteen months after therapy discontinuing the T-3 led to depression and she had to return to taking T-3 to control this, plus burning of the eyes and blurring. Finally, 22 months after the initial therapy, it was possible to stop the tri-iodothyronine in spite of some persisting mild exophthalmus, and she has been able to remain off it with normal thyroid function another six months, up to the present time.

In summary, this patient whose gland was normal sized, and whose history of hyperthyroidism was of several months' duration, developed hypothyroid symptoms after a minimal dose of three millicuries of I-131. This was chiefly related to the eyes, with the development of progressive, mild exopthalmus, but after a year and a half of tri-iodothyronine therapy it was possible to stop the drug and maintain the patient in a euthyroid state.

This emphasizes that some patients who have been on exogenous thyroid, secondary to radioiodine therapy, particularly those started soon after therapy, need not stay on it indefinitely. Of course, she may need it again in a year or two, but this case suggests that once started, and even used for a year or two, thyroid replacement may not need to be continued indefinitely. This patient's problem in replacement therapy demonstrates the difficulty in controlling one symptom but aggravating another at the same time, limiting the dose needed to control the original symptom.

Case 2

This was a 37 year old woman who had lost twenty pounds in five months in spite of a good appetite. She had increased perspiration, dyspnea, palpitations, swelling of the hands and feet, nervousness, mild diarrhea, scant menses, depression, sluggishness and moodiness. The pulse was 116, and the blood pressure was 150/60. The hands were moist with a definite tremor. She had no eye signs. Her 24 hour uptake was 71%, and chemical PBI was 9.1 micrograms. On scan, she had a large, diffuse, symmetrical goiter. Because of her age, it was elected to treat her with propylthiouracil, followed by surgery, preceded by Lugol's solution for 10 days prior to surgery. This was done in a period of about three months. About 10% of the gland remained following surgery, and immediately following hospitalization she was improved. However, within two months of surgery she had further weight loss, increased nervousness, tachycardia, tremors and tenseness, with a radioiodine uptake of 55% and T-3 48.3. It was elected to treat her with 2.5 millicuries of radioiodine. Within three months she was improved, with weight gain and decreased uptake and a normal pulse. However, six months later, with an uptake of 50%, increased nervousness and tremor, she was discovered to be pregnant, and therefore started on propylthiouracil, and carried through the pregnancy without complications.

After delivery, the propylthiouracil was stopped, and two months later her uptake was 37% and T-3 30, and a year later she remained euthyroid.

In summary, this patient was treated with propylthiouracil, pre-surgical, because of her age. Surgery, which was technically adequate, was followed by two months control, and then the development of recurrent hyperthyroidism, which was treated with a small dose of radioactive iodine. Although this initially appeared to control her, within six months signs of hyperthyroidism showed once again which may have been responsible for the flare of symptoms and signs. Subsequently, she was treated with propylthiouracil through pregnancy, and then remained euthyroid a year and a half later.

Case 3.

This patient was a 52 year old woman, first seen because of chest pain and dyspnea, the chest pain being relieved by nitroglycerine and rest. Her symptoms had been progressive for six months. She also had heat intolerance, increased perspiration, nervousness, weight loss, and a questionable history of diabetes. She had a rapid fine tremor, with velvety skin, and a large, diffuse goiter, and a pulse of 160 with a systolic gallop. Her cholesterol was 111 mg %. Radioactive iodine uptake was 56% in four hours, 44% in 24 hours, chemical PBI was 29.1 micrograms, and T-3 60.8. The scan suggested a multinodular goiter. She was started on Tapazole, reserpine and phenobarbital, and kept at bed rest. Oxygen was needed for pain, as well as nitroglycerine.

Three months later, when seen as an outpatient, her weight was up, and her pulse was down. The gland was somewhat larger, with a 35% twenty four hour uptake several days after stopping her Tapazole. Her heart failure appeared to be under control. She was given four millicuries of I-131. The Tapazole was restarted. In spite of this, in six weeks she had cough, dyspnea, tachycardia, and tremor, and later, four months after the initial radioactive iodine therapy, her uptake, two weeks after stopping Tapazole, was 55% in twenty-four hours, and the T-3 was 40.5. While off the Tapazole she developed cough, dyspnea, and tightness in the chest, with a mild tachycardia of 112. Therefore, she was given another four millicuries of radioactive iodine with improvement in six weeks. However, three months later, her uptake was again up to 64%, and her symptoms recurred after stopping Tapazole, with an associated weight drop from 101 to 98 pounds, and a mild tachycardia. Therefore, she was given another four millicuries of radioactive iodine and returned to Tapazole therapy.

Three months later, a year after her original Tapazole therapy, her uptake was 60% and her weight dropped again after stopping Tapazole for two weeks. Therefore, she was given another four millicuries of radioactive iodine, with improvement a month later, clinically and laboratory-wise.

Three months later she once again developed clinical and laboratory evidence of hyperthyroidism after stopping Tapazole, and was given another three millicuries of radioactive iodine. Five more millicuries were given in another several months, about a year and a half after her original therapy, when her therapy uptake was 87%, and constant at 48 hours. She did well for several months and then her uptake went from 31 to 52%, and she was given eight more millicuries of radioactive iodine.

Three months later, or two years after her original therapy, her 24 hour uptake was 22%, and T-3 25.5. She appeared to be euthyroid and her thyroid was less prominent off the Tapazole.

When last seen two and three quarters years after her original therapy, and two and one half years after her original radioactive iodine therapy, her uptake was 18% and T-3 was 30.8. Her weight was 115, up from a low of 97. She had no signs of heart failure, although her pulse was up slightly to 100.

In summary, this patient had a multinodular gland and was undertreated initially. She was given antithyroid drugs, in view of her precarious cardiac situation. It is doubtful that any harm was done by a prolonged course of this type. The patient was euthyroid during most of it, thanks to her drugs. She probably was seen more frequently than necessary had she been treated more vigorously initially. Her total therapy dose was 31 millicuries.

Conclusions

There is no one satisfactory treatment for all types and complications of hyperthyroidism. The incidence of hypothyroidism following radioactive iodine is approximately one-third, in long term followup. Low dosage therapy did not seem to reduce the incidence in 120 patients followed over a 12 year period. Each case has its individual considerations, and although radioactive iodine is suitable for therapy in most individuals, such problems as juvenile hyperthyroidism, pregnancy, massive glands, and excessively resistant thyroids may require other forms of treatment.

REFERENCES

1. Stanbury, J. B., De Groot, L. J.: Problem of hypothyroidism after I-131 therapy of hyperthyroidism. New Eng. J. Med. 271: 195:6, July 23, 1964.
2. Dunn, J. T. and Chapman, E. M.: Rising incidence of hypothyroidism after radioactive iodine therapy in thyrotoxicosis; New Eng. J. Med. 271: 1037-42, Nov. 12, 1964.
3. Pittman, J. A., Jr.: Hyperthyroidism as viewed by an internist; Alabama J. Med. Sci., 1, 49-59, 1964.
4. Crile, G., Jr.: Treatment of hyperthyroidism with I-131; Amer. J. Surg., 107: 545-6, 1964.
5. Costa, A., Cottino, F., Zoppetti, G.: Surgery compared to radioiodine therapy in the treatment of hyperthyroidism; Panminerva Med. 7:238-42, 1965.
6. Bierwalters, W. H.: Treatment of hyperthyroidism and thyroid cancer with I-131; North West Med., 63: 871-878, 1964.
7. Pochin, E. E.: The late effects of irradiation — Clinical aspects; Radiation exposure from the use of radioiodine in thyroid disease; Proc. Roy. Soc. Med. 57: 564-5, July 1964.

RADIATION THERAPY

• In modern medicine, radiation therapy is no longer a palliative for terminal cancer patients. It is a highly sophisticated scientific and clinical discipline which, with surgery, constitutes the only therapeutic modality that can cure cancer. Its indications and limitations must, however, be understood.

Carlo A. Cuccia, M.D.

In this era of highly sophisticated technical advances, radiation therapy has kept pace with the progress of medical science and has become a well recognized medical specialty which requires special training based upon broad knowledge of the many facets of radiobiology, oncology and medical physics. However, the impact of radiation physics upon radiation therapy and the development of highly sophisticated tools has not changed drastically the basic medical approach to therapy and the doctor-patient relationship. In fact, the radiation therapist still remains a physician, confronted daily with the care of his patients and with all the medical and psychological needs related to cancer.

At the present time, fortunately, in most medical communities, it is only a sad memory of the past, the time when the radiologist was merely filling prescriptions of fellow physicians who dictated the modalities and the dosage of radiation therapy to be given to their patients. In fact, the delivery of a certain amount and type of radiation constitutes only part of the work of a radiation therapist. A complete medical evaluation of patients, their medical and psychological care during the treatment, the constant contact with them in the post-irradiation period, and all the followup examinations are all integral parts of radiation therapy.

Radiation therapy should not be and is not a competitive modality of treatment of cancer in its relationship with surgery and chemotherapy. Only through the coordinated efforts of the three specialties can a comprehensive care of cancer patients be achieved with resulting improvement of the survival rate or of the palliative care of incurable cases.

The knowledge of the physical aspects of radiation therapy and of the clinical application of radiobiology has removed radiation therapy from the empiricism which characterized this specialty up to approximately one or two decades ago. The credit for having put radiation therapy on a sound physical basis must be given to the Christie Hospital and Holt Radium Institute in Manchester, England, and its Director for many years, Ralston Paterson. In 1948, a book came off the press describing for the first time, radiation therapy as a scientific doctrine. Its title was: "The Treatment of Malignant Disease by Radium and X-rays Being a Practice of Radiotherapy," by Ralston Paterson. Since then, the development of new tools and mostly of supervoltage and megavoltage equipment has not detracted from the basic concept of the Manchester School of Radiation Therapy and it has actually confirmed the fact that radiation therapy can only exist on a sound physical and radiobiological basis. It must not be forgotten, however, that such level of scientific achievement could not have been reached without the wealth of astute clinical observations, innumerable years of experience and development of techniques still employed nowadays, contributed by the European schools of Radia-

---

Dr. Cuccia is Director, Department of Radiation Therapy, Wilmington Medical Center.

tion Therapy and by such men as Holtusen, Heyman, Coutard and Baclesse.

At the present time, with very few exceptions, cure of cancer can only be obtained either by surgical or radiotherapy treatment. Indications for either one or both of the two modalities depends upon many factors which are to be carefully evaluated before a decision is made. Such factors as patient's age and general condition, unrelated medical problems, size and location of the tumor, extent of the disease, proximity to critical areas, occupation of the patient, cosmetic and functional result, and, finally, histology of the tumor play an extremely important role in the decision.

The patient's age, his general condition and the presence of unrelated medical problems are often contraindications to a surgical procedure which, under ordinary circumstances, would be the treatment of choice. A carcinoma of the endometrium in an obese, hypertensive, diabetic patient is often treated by radiation therapy alone rather than the accepted modality of preoperative irradiation and hysterectomy.

The size of the tumor and its location very often contraindicates, or renders impossible, a radical surgical extirpation. The tumor can either be frankly technically inoperable or its location near vital structures renders the removal impossible without endangering the patient's life. Such cases very often require either preoperative irradiation to render the tumor operable, or radical radiation therapy alone. For example, the operative mortality due to blood loss in the removal of large Wilms' tumors is considerably reduced through shrinkage of the neoplastic mass obtained by preliminary external irradiation.

The extent of the disease and the presence of regional metastases is very often an indication for radical radiation therapy instead of the commonly used surgical procedure. A carcinoma of the breast with supraclavicular lymph node metastases or a bronchogenic carcinoma with a positive scalene biopsy falls in this group.

The patient's occupation sometimes makes one modality of treatment preferable over the other as in the case of a farmer with multiple eptheliomas of the skin of the face and hands who is better treated by surgical excision. Radiation therapy, in fact, would add injury to tissues which are likely to be further exposed to the actinic radiation of the sun.

Cosmetic results play a role in that the procedure which will produce the least deformity should be chosen as long as the results are comparable.

A good functional result should always be high on the list of factors to be considered in deciding a treatment. In several lesions of the head and neck area, approximately the same results can be obtained by surgical or radiotherapeutic procedures. However, in many locations, radiotherapy is to be preferred because of the preservation of the function, such as in carcinoma of the larynx or carcinoma of the tongue where the patient treated by radiation therapy has the advantage of keeping such important organs.

The most important factor, however, in deciding what course of therapy to undertake is the histology of the tumor. Many types of cancers do not respond favorably to radiation because of an intrinsic radioresistance. In this first group of cases, surgery, as in the adenocarcinomas of the gastrointestinal tract, has a better chance to succeed.

A second group of cases is composed of tumors which are quite radiosensitive and which are, therefore, treated by radiation therapy. Carcinomas of the tonsil, base of the tongue, nasopharynx, medullablastomas and localized lymphomas belong to this group.

A third large group exists where the sensitivity of the tumor to radiation is only moderate and where both surgery and radiation therapy can obtain approximately the same survival rate. This is the case of most squamous cell carcinomas of the oral cavity, larynx, pharynx, cervix in the early stage, vagina, and tumors of the urinary bladder. In all such cases, the following rule applies: If the result of the two procedures is practically the same, the procedure of choice is the one that is followed by the least number of complications and by the best functional results. A Stage I carcinoma of the cervix can be cured by radiation therapy or surgery in approximately 85% of the cases. However, radiation therapy is the treatment of choice because the incidence of urinary fistulas following the surgical procedure is not less than 10% while the same complication occurs following radiation therapy in approximately 3% of the cases. Similarly, an early lesion of the vocal cord can be cured in practically 95% of the cases by either radiation therapy or surgery. However, radiation therapy is the treatment of choice for the preservation of the organ.

The whole treatment, however, is not always carried out entirely by one or the other modality. A combination of the two procedures, in fact, is very often indicated for several reasons and can be approached either as preoperative or postoperative irradiation.

Preoperative irradiation is basically given for the following reasons:

1. Render operable an inoperable tumor. In most tumors, in fact, if the criteria of operability are not strictly followed, a considerably high number of local recurrences takes place. It is well known that the part of the tumor which is most sensitive to irradiation is the periphery where the blood supply is particularly rich and the mitotic activity very high. It is the periphery of the tumor that creates the condition of inoperability by infiltrating adjacent structures. Preoperative irradiation given in such cases is extremely effective in destroying the periphery of the tumor, leaving the bulky central part of the lesion, usually more resistant, for a more successful surgical removal. Such is the case of carcinomas of the breast with partial fixation, bronchogenic carcinomas, and some head and neck tumors.
2. Reduction of the incidence of local surgical seeding and distant metastases produced by the surgical manipulation. It is a very well-known fact that preoperative irradiation considerably diminishes the cell population of a tumor and reduces the viability of the remaining cells. As a consequence, a limited number of malignant cells is squeezed by the surgical manipulation into the blood vessels and the cells that are disseminated are not very likely to "take" as their viability has been considerably reduced. Irradiation of the "tumor bed" also reduces considerably the chances of local surgical seeding. These advantages of preoperative irradiation have been demonstrated clinically. A considerable reduction of the incidence of chest wall recurrences following radical mastectomy for carcinoma of the breast is obtained if preoperative irradiation is used. The incidence of distant metastases is cut by at least 50% in cases of bronchogenic carcinomas treated preoperatively. A considerably better survival rate is obtained in adenocarcinomas of the endometrium if preliminary radium treatment is used.
3. Less extensive surgery and reduced operative mortality in cases subjected to preoperative indications, as in Wilms' tumor.

Postoperative irradiation has two main indications:

First, gross incomplete removal of the tumor or radical removal of a tumor which is ordinarily followed by a high incidence of local recurrences. The first is the case of many brain tumors, hypopharyngeal lesions, epitheliomas of the skin, retroperitoneal tumors, in which radiation therapy given postoperatively is sometimes successful in completely destroying the residual tumor. The second is the case of soft tissue sarcomas, parotid tumors and carcinomas of the rectum where surgical excisions apparently complete are followed by a high incidence of local recurrences. The number of such recurrences can be reduced by approximately one-half if postoperative irradiation is given.

The second modality of postoperative irradiation is used in the treatment of those tumors known to give a high incidence of metastases to the regional lymph nodes. In such cases ordinarily the primary is radically removed but the regional lymph nodes are either left in place or incompletely removed. Such is the case of the supraclavicular and internal mammary chain lymph nodes in carcinoma of the breast, of the mediastinal lymph nodes in bronchogenic carcinoma and carcinoma of the esophagus, and of the periaortic lymph nodes in seminomas of the testis. The five-year survival rate in all these cases is considerably enhanced by the systemic use of postoperative irradiation to the regional lymph node areas.

If the main aim of radiation therapy is to obtain the patient's cure through a radical treatment, one must also realize that it is also one of the most valuable ways to obtain satisfactory and long-lasting palliations. Many lesions, which are too advanced to be radically treated by either radiation or surgery, can be kept under control for a relatively long period of time with minor discomfort for the patient, if palliative modalities of radiation therapy are utilized. Large, bleeding and infected neoplastic craters, either on the skin or on the mucous membranes, can be healed temporarily; large masses producing compression symptoms can be reduced in size considerably; extremely painful bony metastases can be recalcified. Palliative radiation therapy must not, however, prolong the "act of dying" by merely lengthening the life of an asymptomatic but otherwise doomed cancer patient. Palliative therapy must be used only if and when symptoms occur and must be used in an amount large enough to reduce such symptoms but not large enough to produce severe and painful reactions.

The availability of supervoltage or megavoltage equipment with energies ranging from one to twenty-four million volts has in the past fifteen years drastically changed the modalities of treatment and to some extent has improved the results. The use of standard x-ray equipment, or kilovoltage equipment, has now become obsolete because of several limiting factors, such as the marked skin reaction which does not allow the delivery of cancerocidal doses of radiation to deep-seated tumors. Clinical usefulness, however, is still found for this type of equipment in relatively superficial tumors which do not require at the same time extremely large amounts of radiation, such as lymphomas, carcinomas of the breast, and tumors in children, and, of course, in palliative treatments.

Supervoltage equipment with its skin sparing effect, greater depth dose, less integral dose and better general tolerance has enabled us to deliver cancerocidal doses of radiation to deep-seated tumors without untoward reaction of the teguments or of the other adjacent normal tissues. Several lesions have benefited from this type of equipment, especially tumors of the pharyngolarynx, where the rate of the local control of the disease has considerably increased to figures which are in the 75-80% range. Still higher energies, such as the ones obtainable in the 24 MeV Betatron, have also considerably improved the five-year survival in extensive pelvic cancer where the results are directly proportional to the amount of external irradiation that can safely be given to the pelvic structures. Carcinoma of the cervix, Stage III, treated with the Betatron to doses up to 7000 rads can nowadays be cured in approximately 40% of the cases. Carcinoma of the urinary bladder, Stage B2 and C, is now being cured with supervoltage external irradiation in approximately 15 to 20% of the cases.

The availability of this modern equipment, however, has not changed the basic indications for radiation therapy. A radioresistant tumor is not rendered sensitive by the use of high energy x-rays. The concept of radioresistance of a tumor is always in function of the sensitivity of the normal tissue surrounding the tumor. In fact, a neoplasm is radioresistant whenever the amount of radiation required to obtain its complete destruction is larger than the amount known to produce permanent damage to the surrounding normal tissues. The available high energy units have not changed such ratio between the tumor lethal dose and the normal tissue tolerance. They offer, however, the great technical advantage of delivering lethal doses of radiation to deep-seated tumors because of the greater penetration of their beams and of the improved systemic tolerance to this type of radiation.

Modern and highly sophisticated new equipment, however, has not eliminated the use of more conventional and somewhat old-fashioned modalities, such as radium therapy. Either in the form of interstitial insertion or intracavitary applications, radium therapy remains one of the most effective ways to cure cancer, both from the standpoint of biological response and of patient tolerance.

The requirements for radium therapy are: Accessibility of the tumor and limited extension of the lesion. Therefore, all early lesions accessible from the outside find their treatment of choice in radium therapy. Such modality offers the advantage of delivering a cancerocidal dose of radiation to a relatively small volume of tissue in a short period of time. It has, therefore, the advantages of producing only extremely localized minimal reactions, reduced damage to the surrounding normal tissues, and considerable shortening of the overall time of treatment. All early lesions of the oral cavity, lips, many lesions of the skin, early lesions of the cervix and vagina, and squamous cell carcinoma of the anus are successfully treated with local applications of radium. Radium therapy is also extremely useful when, after a course of external irradiation, the need arises to further increase the dose in the residual central part of the tumor, which, being the most radioresistant, requires the largest amount of radiation. Such is the case of extensive lesions of the oral cavity, metastatic nodes of the cervical and inguinal regions, and late carcinomas of the cervix and vagina. In such cases, the primary tumor and the regional lymphatics are treated en bloc by external irradiation: Limited regional radium therapy in the form of intracavitary or interstitial applications is used at the end of the treatment to boost the dose at the level of the residual tumor.

The availability of gamma-producing radioactive isotopes, such as Iridium, Yttrium Tantalum, Cesium and Cobalt have now added to the traditional radium tubes and needles a considerable array of extremely useful substitutes which can be utilized in the form of seeds, wires, pellets and threads. These new tools have expanded the indications for interstitial or intracavitary radiotherapy and at the same time, through the use of the so-called "afterloading technique", have considerably reduced the operator's exposure to radiation.

Modern radiation therapy, building upon past experience and traditional modalities but not entirely departing from them, with the development of better equipment and a better understanding of the principles of biophysics and radiobiology, has undoubtedly made a great deal of progress in the treatment of curable cancer. Such progress has been paralleled by similar advances made in the field of surgery and chemotherapy, and very often the combination of two or three of these modalities can offer the patient the best chance for a cure. It must, however, be remembered that if such association is essential for the patient who is affected by cancer at the present time, for the future we must strive toward prevention and early detection of cancer and eventually complete knowledge of its nature and causes.

CLINICAL NOTICES AND MEETINGS

The symposium on *Diseases of the Thyroid Gland; Current Concepts,* has been reprinted in a special brochure. It appeared originally in the January 1 and January 15, 1963, issues of the *New York State Journal of Medicine.* Copies are available from that office, 750 Third Avenue, New York, N.Y. 10017, at $1.00 each.

Denver, Colorado, will be the site for the Rocky Mountain Cancer Conference on July 14-15 at the Brown Palace-West Hotel. For further information, write: Rocky Mountain Cancer Conference, 1809 East 18th Avenue, Denver, Colorado 80218.

USE OF A RADIOACTIVE TRACER TO STUDY A SUSTAINED RELEASE DOSAGE FORM IN HUMANS

Indications, Modalities and Limitations

• A radioactive tracer study of a dosage form designed to make the management of geriatric patients much easier by minimizing the possibility of neglected doses through absentmindedness or senile confusion.

Human volunteers were given ^{14}C labeled nicotinic acid, administered orally in the form of sustained release tablets and non-sustained release tablets. The non-sustained release tablets were given as a single dose and also at zero, four and eight-hour intervals. The sustained release tablets were given as a single dose. Urinary excretion and ^{14}C plasma levels were measured by liquid scintillation counting. This data showed that the sustained release tablets provided a sustained plasma level for twelve hours, accompanied by a consistent urinary excretion rate. The non-sustained release tablets given in divided doses showed three peak plasma levels and a urinary excretion rate similar to the sustained release tablet. The technique employed provides a valuable tool to study the **in vivo** performance of sustained release products in humans.

William R. Ebert, Ph.D.
Robert W. Morris, M.S.
Robert L. Bogner, Ph.D.

Until recently the methods of studying the *in vivo* performance of a sustained release dosage form in humans have involved chemical analysis of the drug level in the plasma or the amount excreted in the urine, unchanged or as metabolites (1-4). Correlation of drug absorption with plasma levels are often difficult considering the limitations of bioanalytical techniques and complicated metabolic and recycling processes. Urinary excretion studies are similarly limited in some instances by the small quantities of drug or metabolites excreted and often require exaggerated dosages to produce measurable amounts of drug with reliability. The use of a radioactive tracer technique to follow the appearance of a drug in plasma and urine of humans has been reported (5-10). This technique measures the radioactivity of both the drug and its metabolites, eliminating the necessity of quantitating the metabolites separately, thus significantly reducing the limitation of microanalytical methods.

The present report describes the use of a radioactive tracer employed to study the absorption and excretion pattern of a sustained release dosage form* and a non-sustained dosage form of the same drug after single oral administration and repeated oral administra-

---

Dr. Ebert is Director, Mr. Morris is Group Leader, Research & Developmen, Philips Roxane Laboratories, Columbus, Ohio; Dr. Bogner is Associate Technical Director, Nuclear Science & Engineering Corporation, Pittsburgh, Pennsylvania.

*Geroniazol TT, Philips Roxane Laboratories.

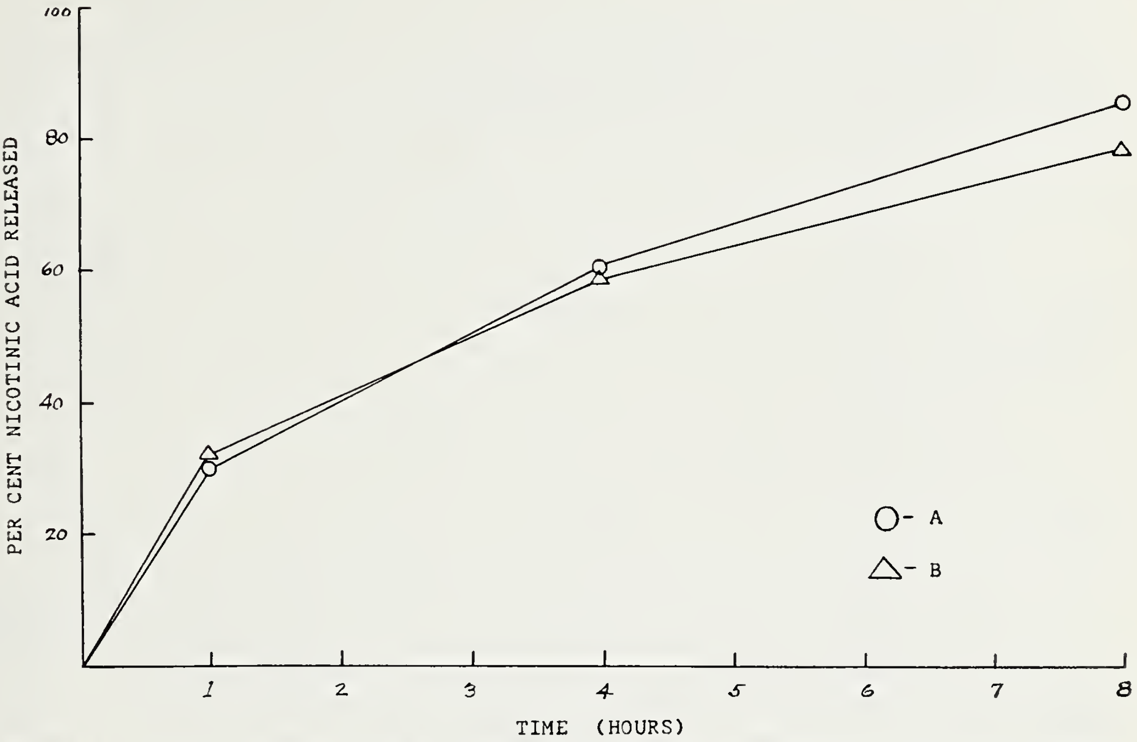


Figure 1 — In vitro release rate of nicotinic acid from sustained release tablets. A: Established average release rate for commercial tablets; B: Average release rate of radioactive sustained release tablets.

tion at zero time, four and eight-hour intervals. The drug used in this study was nicotinic acid, made radioactive by carbon-14 labeling.

Experimental

Radioactive Nicotinic Acid. — Nicotinic-7-C-14 acid** with a specific activity of 1.0 MC per 12.2 mg. was diluted with non-radioactive nicotinic acid, U.S.P. XVI. Three batches of radioactive nicotinic acid were produced, each with different specific activities, viz., 10 uc per 50 mg. of nicotinic acid, 20 uc per 50 mg. of nicotinic acid and 25 uc per 150 mg. of nicotinic acid. Each batch was prepared in the same manner, e.g., nicotinic-7-C-14 acid and non-radioactive Nicotinic Acid, U.S.P. XVI were dissolved in boiling ethanol with stirring. The ethanol was evaporated at room temperature under a stream of nitrogen. The radioactive nicotinic acid thus obtained was dried for eighteen hours over phosphorus pentoxide.

Radioactive Tablets.—Three different compressed tablet formulas were manufactured with the diluted nicotinic-7-C-14 acid, as follows:

Formula A. — Sustained release tablets identical to commercial forms*, with the exception of the use of radioactive nicotinic acid, 150 mg. (equivalent to 25 uc) and pentylenetetrazole, 300 mg., fatty substances and inert excipients.

Formula B. — Non-sustained release tablets, containing radioactive nicotinic acid, 50 mg. (equivalent to 20 uc), pentylenetetrazole, 100 mg. an dinert excipients.

Formula C. — Non-sustained release tablets, containing radioactive nicotinic acid, 50 mg. (equivalent to 10 uc), pentyletetrazole, 100 mg. and inert excipients.

In Vitro Release-Rate Tests

Prior to the evaluation of the radioactive

**Nicotinic-7-C-14 acid was obtained from the New England Nuclear Corporation.

*Geroniazol TT®, Philips Roxane Laboratories, Columbus, Ohio.

	Per cent Released	
Time (Hours)	*Radioactive Tablets (Formula A)*	*Established Limits (For Commercial Product)*
1	30.5	
	31.9	
	33.6	
	32.4	
Average	32.1	30.5±3.5
4	55.5	
	58.3	
	60.6	
	58.2	
Average	58.2	60.0±5.0
8	77.5	
	79.4	
	80.8	
	79.2	
Average	79.2	85.0±10.0

TABLE I

In Vitro Release Rate of Nicotinic Acid from Sustained Release Tablets.

sustained release tablets in human subjects, the *in vitro* release rate was determined in order to establish conformation of the radioactive tablets to commercial forms.* The U.S.P. Tablet Disintegration Test Apparatus (11) was used to determine the *in vitro* release rate as follows: One tablet was placed in one of the six tubes of the basket-assembly and the basket immersed in 600 ml. of Simulated Fluid, T.S. at 37° ± 1° C. After operation of the apparatus for one hour the basket was removed, rinsed and immediately transferred to 600 ml. of Simulated Intestinal Fluid, T.S. at 37° ± 1° C. Samples of the test fluid were withdrawn at the fourth and eighth test hour, keeping the volume of the test fluid constant throughout the test. The one, four and eight-hour samples were assayed for nicotinic acid by the U.S.P. XVI method for nicotinic acid[12].

Administration of Radioactive Tablets to Human Volunteer Subjects

Twelve adult human volunteer subjects, free of disorders likely to be associated with abnormal absorption and excretion patterns, were used in this study. Administration of the tablets containing radioactive nicotinic acid was under the supervision of Dr. Campbell Moses, Addison H. Gibson Laboratory, and Dr. Richard Wechsler, Department of Medicine, University of Pittsburgh. The subjects included eight women and four men between 18 and 35 years of age and weighing from 110 to 200 pounds. All subjects fasted overnight and were allowed no food for five hours after the start of the experiment. Each of four subjects (Group A: subjects 1, 2, 3 and 4), were given one tablet of Formula A, the sustained release tablet. Each of four other subjects (Group B: subjects 5, 6, 7 and 8), were given one tablet of Formula B, a non-sustained release tablet. Each of four additional subjects (Group C: subjects 9, 10, 11 and 12), were given one tablet of Formula C, a non-sustained release tablet, at zero time, four hours later and again eight hours after the time-zero dose. All tablets were ingested with four ounces of water.

Blood samples were withdrawn from subjects 1 through 8 at 1, 2, 4, 6, 8, 12, 24 and 48

---

*Geroniazol TT, Philips Roxane Laboratories.

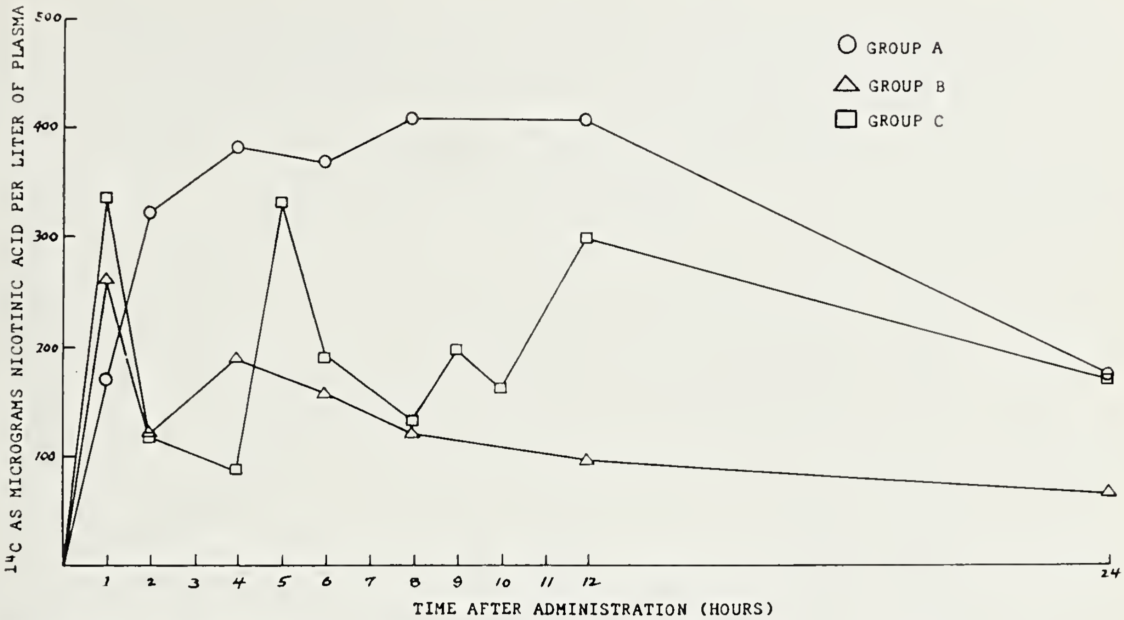


Figure 2 — Average plasma levels of ^{14}C radioactivity following oral administration of ^{14}C nicotinic acid tablets. Group A: One sustained release tablet containing 150 mg. ^{14}C nicotinic acid; Group B: One non-sustained release tablet containing 50 mg. ^{14}C nicotinic acid; Group C: One non-sustained release tablet containing 50 mg. ^{14}C nicotinic acid at 0, 4, and 8 hours.

hours post-administration. Blood samples were withdrawn from subjects 9 through 12 at 1, 2, 4, 5, 6, 8, 9, 10, 12, 24 and 48 hours post-administration. All blood samples were heparinized, the plasma immediately separated by centrifugation and frozen until analyzed. Total urinary collections were made for all patients at intervals of 0 to 4 hours, 4 to 8 hours, 8 to 12 hours, 12 to 24 hours and 24 to 48 hours post-administration.

Analysis of Radioactivity

The ^{14}C radioactivity in each plasma and urine sample was determined by liquid scintillation counting technique. Plasma samples were counted by adding 0.3 ml. aliquots of plasma to a 5 cm. column prepared from dioxane-Florisil slurry and eluting the ^{14}C radioactivity with 3 ml. of dioxane-water (1:1). This elution technique was found to recover over 95 percent of the ^{14}C radioactivity from columns to which known amounts of ^{14}C nicotinic acid in control plasma was added. The elutions were collected in counting vials to which 15 ml. of scintillation solution containing 200 mg. of dimethyl-POPOP*, 4 gm. PPO**, 50 gm. naphthalene, 100 ml. methanol, 20 ml. ethylene glycol and sufficient dioxane to make 1 liter, was added. All sample counts were corrected for background and counting efficiency as determined from standards. Results are expressed in terms of "equivalent nicotinic acid concentrations" based upon the assumption, for purposes of calculation, that the specific activity of the radioactive compounds in the plasma corresponded to the specific activity of the initial ^{14}C nicotinic acid.

Urine samples were counted by adding 0.4 ml. aliquots of urine to 15 ml. of scintillation solution, described above. All sample counts were corrected for background and counting efficiency and results are expressed as milligrams of nicotinic acid excreted, again assuming that the specific activity of the radioactive compounds in the urine was identical to the specific activity of the administered ^{14}C nico-

---

*1, 4-Bis-2-(5- phenyloxazolyl-benzene)
**2, 5-Diphenyloxazole

TABLE II

PLASMA LEVELS OF ^{14}C NICOTINIC ACID FOLLOWING ORAL ADMINISTRATION OF ^{14}C NICOTINIC ACID TABLETS

Subjects	*EQUIVALENT PLASMA NICOTINIC ACID* (*mcg./L.*)*										
	Time After Administration (*Hours*)										
Group A	1	2	4	5	6	8	9	10	12	24	48
1	241	432	549	—	332	416	—	—	295	178	65
2	241	70	205	—	197	378	—	—	414	168	300
3	100	362	184	—	351	465	—	—	549	100	0
4	103	419	592	—	597	376	—	—	362	246	330
Average	171	321	383	—	369	409	—	—	405	173	174
Group B											
5	334	137	216	—	172	168	—	—	109	96	18
6	155	108	184	—	118	69	—	—	91	81	21
7	374	126	191	—	182	99	—	—	114	53	74
8	184	113	169	—	156	144	—	—	71	32	79
Average	262	121	190	—	157	120	—	—	96	66	48
Group C											
9	243	36	86	268	162	—	9	146	286	201	20
10	392	106	124	396	295	164	376	205	219	176	18
11	435	255	101	489	218	173	205	241	381	241	149
12	266	77	41	176	86	59	—	59	302	61	0
Average	334	119	88	332	190	132	197	163	297	170	47

*Calculation based upon the assumption that the specific activity of the radioactive compounds in the plasma was identical to the specific activity of the administered ^{14}C nicotinic acid.

tinic acid. Samples were counted in a Packard Tri-Carb (Model 314S) liquid scintillation spectrometer with counting chamber set at 5° C., discriminator settings of 10-90 and voltage which corresponded to the peak counting rate.

Results

The *in vitro* release rate data for the sustained release tablets (Formula A), administered to human subjects is shown in Table I. The data is plotted as per cent released in Figure 1.

The plasma levels of ^{14}C radioactivity for each of the four human subjects of the three test groups, following oral administration of ^{14}C nicotinic acid tablets, are shown in Table II. The ^{14}C levels include the contributions from ^{14}C labeled nicotinic acid as well as ^{14}C containing metabolites.

The plasma levels of ^{14}C radioactivity, for each test group, are plotted in Figure 2 as arithmetic average micrograms of nicotinic acid per liter.

Urinary excretion levels of ^{14}C radioactivity for each subject of the three test groups, expressed as milligrams nicotinic acid excreted, are shown in Table III. Cumulative arithmetic average urine levels of ^{14}C radioactivity for Test Group A, B and C are plotted in Figure 3.

Discussion

The *in vitro* release-rate of the radioactive, sustained release tablets agrees satisfactorily with established limits for the commercial product, as seen in Figure 1.

From the data plotted in Figure 2 it is seen

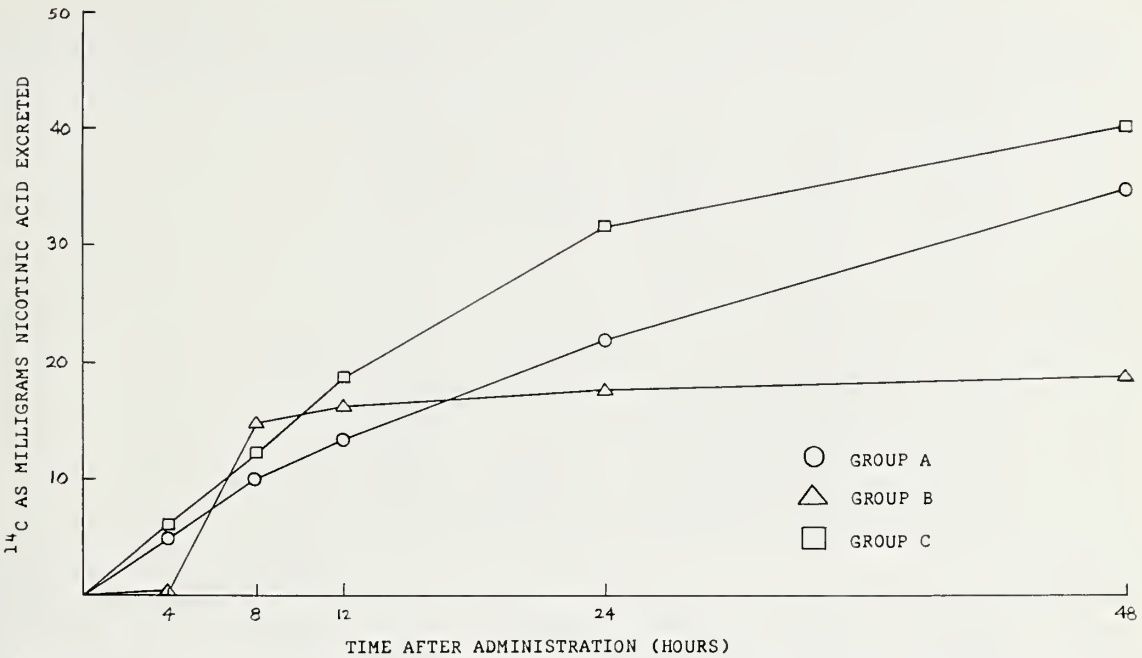


Figure 3 — Cumulative average urinary excretion of ^{14}C radioactivity following oral administration of ^{14}C nicotinic acid tablets. Group A: One sustained release tablet containing 150 mg. ^{14}C nicotinic acid; Group B: One non-sustained release tablet containing 50 mg. ^{14}C nicotinic acid; Group C: One non-sustained release tablet containing 50 mg. ^{14}C nicotinic acid at 0, 4, and 8 hours.

that peak plasma levels are uniformly attained within one hour following ingestion of the non-sustained release dosage forms, followed by continual decrease in plasma concentration. After administration of the sustained release preparation, a gradual rise in plasma level was observed, with an apparent plateau for twelve hours, followed by a gradual fall in plasma level. Repeated administration of the non-sustained release dosage form at four-hour intervals, was shown to result in typical rises and falls in plasma concentration, the third dose appearing to be absorbed less rapidly than the preceding two doses.

Urinary excretion recoveries of ^{14}C radioactivity following administration of the sustained release dosage form (Figure 3), indicates continuous excretion at approximately the same rate. Urinary excretion following single oral administration of the non-sustained dosage form shows peak excretion during the four to eight hour period, followed by minimal amounts thereafter. The urinary excretion following repeated dosage at four-hour intervals is similar to that of the sustained release dosage form but at an increased rate.

The total amount excreted during 48 hours is in good agreement with the literature that states that only between 22 per cent[11] and 40 per cent[12] of ingested nicotinic acid is excreted as nicotinic acid or its metabolites.

The excretion rate of individual subjects demonstrates considerable variation particularly during 0-4 hours. Considering the pharmacology of nicotinic acid, the amount excreted depends upon the amount in the plasma[11]. Though the subjects were fasted 12 hours prior to drug administration, endogenous nicotinic acid will cause variations in excretion rate.

An evaluation of the characteristics of a sustained release dosage form by measuring blood levels and urinary excretion can be expected to be complicated in those instances where an exogenous dose of the drug is presumably incorporated into the metabolic pool of endogenous compound. It is likely that the uptake of administered radioactive nicotinic

Subjects	*Milligrams Nicotinic Acid Excreted Time/Interval (Hours)*				
Group A	0-4	4-8	8-12	12-24	24-48
1	12.610	2.520	1.690	9.250	15.300
2	1.020	2.620	4.460	11.100	11.400
3	6.400	7.550	5.280	4.270	22.400
4	N.D.*	7.500	2.050	9.090	2.210
Average	5.000	5.050	3.370	8.430	12.830
Group B					
5	N.D.	35.400	——	0.910	1.120
6	N.D.	10.700	3.420	1.170	0.730
7	——	8.780	1.270	2.060	0.320
8	1.580	2.140	1.550	2.060	1.970
Average	0.395	14.255	1.560	1.550	1.035
Group C					
9	——	12.830	4.890	13.300	7.390
10	13.650	11.370	4.100	8.600	8.310
11	5.290	——	7.790	14.260	8.240
12	5.540	——	9.390	15.070	10.000
Average	6.120	6.050	6.543	12.807	8.485

TABLE II

Urine Levels of ^{14}C Radioactivity Following Oral Administration of ^{14}C Nicotinic Acid Tablets.

*N.D.—None Detectable

acid by different tissues could vary with the nutritional state of the subject. Knowledge concerning the pathways of metabolism, the pool sizes of the metabolites, and the relative rates of formation of the individual metabolites, as well as the various fates of the different metabolites, would be necessary to fully interpret the plasma levels and urinary excretion patterns of the ^{14}C radioactivity derived from the nicotinic ^{14}C acid. Certainly the determination of absorption of nicotinic acid by appearance of radioactive material in the plasma will be complicated by the intricate kinetics of disposition within the body. Despite these difficulties, the results of the present study permit a valid comparison of two different dosage forms of orally administered nicotinic acid, a non-sustained release tablet and a tablet designed to provide sustained release of the drug, and demonstrate the absorption and excretion performance of these dosage forms.

Summary

1. Nicotinic-C-14 acid was prepared and incorporated into sustained and non-sustained release tablets.

2. ^{14}C radioactivity in plasma and urine of human subjects following oral ingestion of these dosage forms was determined.

3. Plasma and urine levels of the sustained release dosage exhibited continuous plasma levels and consistent, continuous excretion over a twelve-hour period.

4. Repeated administration of non-sustained dosage at four-hour intervals exhibited typical rises and falls in plasma levels and excretion rate comparable to the sustained release dosage.

REFERENCES

1. Wagner, J. G., Carpenter, O. S., and Collins, E. J.: J. Pharmacol. and Exptl. Therap., 129, 101, 1960.
2. DeRitter, E.: Drug Std., 28, 33, 1960.
3. Heimlich, K. R., MacDonnell, D. R., Polk, A., and Flanagan, T. L.: J. Pharm. Sci, 50. 213, 1961.
4. Heimlich, K. R., MaçDonnell, D. R., Flanagan, T. L., and O'Brien, P. D., ibid., 50. 232, 1961.
5. Rosen, E., and Swintosky, J. V.: J. Pharm. Pharmacol., 12, 237T, 1960.
6. Sjogren, J., and Ostholm. I.: ibid., 13. 496. 1961.
7. Johnson. P. C., and Masters, Y. F.: J. Lab. & Clin. Med., 59, 993, 1962.
8. Rosen, E.: J. Pharm. Sci., 52, 98. 1963.
9. Cavallito, C. J., Chafetz, L., and Miller, L. D.: ibid., 52, 259, 1963.
10. Bogner. R. L., and Walsh. J. M.: ibid., 53, 617, 1964.
11. Sollman, A.: Manual of Pharmacology, 1950.
12. Goodman and Gilman: The Pharmacologic Basis of Therap., 1955.
13. "U. S. Pharmacopeia": 17th rev., pp. 919-921, 1965.
14. "U. S. Pharmacopeia": 16th rev., pp. 457-458, 1960.

REPORT FROM THE BEACH

ENDOCRINOLOGY

• The following are the reports of a few of the several hundred papers presented at the annual May meetings of the American Society for Clinical Investigation and the American Federation for Clinical Research, held in Atlantic City, N.J. These represent reviews of papers heard and appreciated by the undersigned and not necessarily the most important of the numerous papers included in the five-day meeting.

Release of Leukocyte Pyrogen by Etiocholanolone

M. Dillard et al, New Haven, Conn.

Etiocholanolone is known to produce fever in men when injected. This paper demonstrated that leukocytes plus etiocholanolone produce a fever-inducing substance, leukocytes from males being more pyrogenic than those from females. Other androgens, as for example, androstenedione are non-pyrogenic. Cortisone reduces pyrogen production.

B.Z.P.

Formation of LATS by Human Thyrotropin-Antibody Complexes

Joseph C. Meek, Kansas City, Kansas

The origin and nature of the long-acting thyroid stimulator of Graves' disease (LATS) is now explained by an elegant series of experiments which demonstrate that normal human thyrotropin (TSH), when combined with antiserum against TSH, develops a LATS-type of action, in which stimulation of iodine uptake by the hormone-antibody complex is delayed to resemble LATS instead of TSH, thus indicating the conversion of TSH to LATS.

B.Z.P.

AMP (Adenosine Monophosphate), Mediator of Action of ACTH Steroidogenesis in the Adrenal Cortex

D. G. Graham-Smith, et al, Nashville, Tennessee

ACTH "works" by activating Adenosine Triphosphate (ATP) to AMP which in turn provokes steroid hormone manufacture. This paper is thus an example of the newer work which tells us how the tropic hormones do their work.

B.Z.P.

Lactation without Growth Hormone

David L. Rimoin, Gerald B. .Holzman, Thomas J. Merimee, David Rabinowitz, Allan C. Barnes, and Victor A. McKusick, Baltimore, Maryland

In humans, Growth Hormone (GH) has never previously been separated from prolactin, the lactation producing hormone, and lactation has been presumed a biological activity of GH. A congenital female "Tom Thumb" type of dwarf lactated normally although GH was not detectable by any test procedures. (Her baby does produce GH normally.)

B.Z.P.

A. Collagenolytic Enzyme from Rheumatoid Synovium in Tissue Culture

J. M. Evanson, J. J. Jeffrey and S. M. Krane, Boston, Massachusetts

Fragments of synovium obtained from rheumatoid patients were found to induce collagenolysis. This abnormality may well play a role in the development of the pathology of rheumatoid arthritis.

B.Z.P.

Depression of Cardiac Output at Rest and During Exercise Produced by Diuresis in Patients with Cardiac Decompensation

S. E. Epstein, G. D. Beiser, M. Stampfer and E. Braunwald, Bethesda, Maryland

After diuresis by thiazides, exercise tolerance was greatly improved in patients with congestive failure despite significant decrease in cardiac out-put.

B.Z.P.

Mechanism of Action of Progesterone in Induction of Synthesis of Specific Protein Avidin in Vitro

B. W. O'Malley and W. L. McGuire, Bethesda, Maryland

The hormone progesterone was conclusively demonstrated to induce formation of avidin, a protein not present in the chicken egg until progesterone was added. From this experiment much is learned about the bio-chemical activity of progesterone.

B.Z.P.

The Role of Adipose Cell Enlargement in the Carbohydrate Intolerance of Human Obesity

L. B. Salans, J. L. Knittle and J. Kirsch, New York, N.Y.

Cells enlarged by increased fat content metabolize glucose normally but require more insulin to do so. The impairment of carbohydrate metabolism in obese persons is thus related to the decrease in insulin sensitivity associated with an increased adipose depot.

B.Z.P.

Growth Hormone (GH) and Thyrotropin (TSH) in the Rat Pituitary in Hypothyroidism and Hyperthyroidism

G. T. Peake, J. F. Wilber, R. D. Utiger and W. H. Daughaday, St. Louis, Missouri

A rational explanation for the marked stunting of growth seen with hypothyroidism in children is now developed by this demonstration that experimental depression of circulating thyroxin by administration of thioureas produces a depressed content of pituitary GH. Conversely, when thyroxin is administered, thyrotropin decreased markedly but GH was relatively unaffected. There is thus in hypothyroidism an inverse relationship between GH and TSH. Experimentally, hyperthyroidism, although it suppresses TSH, does not affect GH.

B.Z.P.

Effect of Pyrogens on Plasma Cortisol and Growth Hormone

H. R. Kimball, M. B. Lipsett, W. D. Odell and S. M. Wolff, Bethesda, Maryland

Experimental fever produced by etiocholanolone does not increase growth hormones (GH) or cortisol. Fever produced by the bacterial pyrogen increases GH although the fever produced by another pyrogen, Lipexal, does not. Both these endotoxins invoke mild increase in cortisol. Fever *per se* did not cause elevation of GH or cortisol secretion.

B.Z.P.

Experimental Hepatitis in Marmosets

A. W. Holmes, R. B. Capps and F. Deinhardt, Chicago, Illinois

An experimental animal, an Amazon monkey, the marmoset, can be infected by injection with serum from patients with hepatitis and the disease can be transferred serially among marmosets. Unluckily for marmosets but luckily for us, a laboratory animal which can be infected by human hepatitis virus has apparently been found.

B.Z.P.

Role of 12-alpha Hydroxylase Deficiency in Continuing Liver Injury

J. B. Carey, Jr., I. D. Wilson, G. Onstad, and F. G. Zaki, Minneapolis, Minnesota

When the liver is injured, the primary bile acid produced becomes lithocholic acid instead of cholic acid. Lithocholic acid produces liver injury when fed to rats. The elevated lithocholic acid in humans with Laennec's cirrhosis can be decreased by cholestyramine administration.

B.Z.P.

The Prevention of Clinical Wilson's Disease

Irmin Sternlier, M.D., I. Herbert Scheinberg, M.D., New York, N.Y.

Using the combination of blood ceruloplasmin and hepatic copper concentration, the authors were able to make a diagnosis of early Wilson's disease before there were any clinical symptoms. Within this group of 49 patients, 39 were regularly decopperized with the administration of D-penicillamine. There was no development of significant manifestations of the disease in the 39 treated patients who were followed for as long as ten years. Whereas, of ten untreated patients, 5 have died and 2 are severly ill with Wilson's disease. This preliminary report suggests that early diagnosis of Wilson's disease is important and that D-penicillamine therapy can prevent the development of clinical symptoms.

R.B.F.

Evidence for a Hormonal Inhibator of Proximal Tubular Reabsorption

M. Martinez-Muldanado, M.D., N. A. Kortman, M.D., F. C. Rector, M.D., D. W. Seldon, M.D., Dallas, Texas

These authors have demonstrated that a humoral factor (third factor) is responsible for the inhibition of proximal tubular reabsorption in response to a saline diuresis. They measured the intrinsic reabsorptive capacity by stop flow micro-profusion technique and were able to show that the plasma from an animal that had rapid infusion of saline when given to a control rat or dog would produce a 30% inhibition of proximal tubular reabsorption of sodium. This impressive demonstration of a new hormone "third factor" represents a real breakthrough in renal physiology and the understanding of salt and water balance.

R.B.F.

Anti-Bacterial of Human Urine

Donald Kaye, M.D., New York, N.Y.

Using the first morning-voided urines from normal males and females, Dr. Kaye noted that bacteria multiplied more rapidly in water or in trypticase soy broth than it did in urine. Using various strains and E. coli, he found that some urines were inhibitory to all strains and other urines were inhibatory to some strains of E.coli and not to others. Some urines were actually bactericidal to particular strains of E.coli and not to others. The inhibitory or bactericidal activity was not altered by boiling, tryptinizing the urines or changing pH but could be abolished by diluting or dialyzing the urine in water. Finally, the anti-bacterial activity of urine was directly related to the urea content and urea when added to water was equally inhibitory or bactericidal for the particular strain to be E.coli. Similar inhibition was noted for bacterial Aerobacter, aerogenes, proteus mirabilis, Pseudomonas aeruginosa enterococcus, streptococcus aureus and staphylococcus albus.

R.B.F.

In Brief

Speakers On "Ask The Doctor"

Speakers for July, 1967, on the Tuesday Radio Program, (11:05 a.m., WDEL) produced by the Medical Society of Delaware are: July 4, Calvin B. Hearne, M.D., *Obesity in Childhood;* July 11: David L. Schafer, M.D., *Eyes;* July 18: Jane C. Straughn, M.D., *Ulcer Disease;* July 25: Robert T. Beattie, M.D., *Industrial Medicine's Relationship with the Family Doctor.*

The Month In Washington

Medicare Drugs

A broad study of prescription drugs is being made by HEW which will be the basis of a recommendation on whether their costs should be covered by medicare when they are used outside a hospital. Prescription drugs have become a heavy burden cost-wise for many older Americans and represent 15 to 20 per cent of their medical care costs. At the very time that age brings an increasing incidence of chronic disease and greater needs for medical care, including prescription drugs, many older Americans find themselves with limited financial resources. Congress may decide the issue before the full study is completed. The Senate Finance Committee will hold hearings this summer on such a medicare extension. Among the major areas listed for task force study are:

1) Present patterns of drug prescription by physicians and of prescription drug use and expense by patients.
2) Reimbursement factors (including determination of costs; co-insurance; deductibles, and limitations on dollar costs, drug quantities, and drug types).
3) Impact of proposed methods of purchasing prescription drugs on costs and quality of patient care, on medical profession, on pharmacy profession, on drug industry, on government.

Measles

Measles (Rubella) should be eradicated this year; the measles vaccine, licensed four years ago, is bringing the disease to the vanishing point. The PHS is now working on an "experimental vaccine" trying to conquer German measles. Health problems, such as cancer, heart disease and venereal disease continue to pose numerous research problems. The fastest rising causes of death and disability in this nation are emphysema and other chronic respiratory diseases.

Air Pollution

The AMA supports all except one provision of legislation (S.780) that would expand the federal government's role in the federal-state program to curb air pollution. This is Section 107 which would require the Secretary of HEW to establish emission standards for certain industries. On the basis of present information on the effect of emission on surrounding air, such a requirement is unrealistic and would not accomplish its intended purpose.

Pre-Career Physicals

Students ready to graduate from high school should be instructed to get a complete physical examination to assure themselves that they are physically fit to embark on their futures. This is the advice of the School

Health Committee of the AAGP, Marjorie F. Conrad, M.D., chairman. "This is a critical moment in their lives, when decisions are made about careers, marriage or military service. It is all important that any physical deficiencies that might affect these decisions should be uncovered and analyzed," states Dr. Conrad. "This is also the first time a young person has a chance to participate in the decision to have a health examination on an adult basis. He will be making decisions about personal health the rest of his life, and the better he understands the reasons for sound health maintenance, the healthier and happier he and his family will be." Dr. Conrad also recommended that parents take their children in for physical examinations on their birthday anniversaries, rather than joining the crowd at the opening of school which overloads available medical manpower and causes unnecessary delays and frustrations not only among parents and children but other patients as well.

Medical School Acceptance Figures

There seems to be a significant relationship between the quantum of students supplied to medical schools and satisfactory results. Facts and figures recently released by the Association of American Medical Colleges show that the colleges which supply the largest number of students to the medical schools have the lowest number of dropouts, academically or otherwise. They must be doing something right in order to have stimulated such numbers and to have prepared them so well. (*New York State Journal of Medicine*)

Personal Glimpses

Daniel Lieberman, M.D., became the pinch-hitter for U.S. Senator Edward M. Kennedy when he addressed 2,000 members of the New Jersey State Federation of Women at the Vineland, N.J., Training School for the mentally retarded . . . William T. Reardon, M.D., has addressed the District F, Student Nurse Association of N.J., and spoke at the annual convention held in Camden, N.J., at Our Lady of Lourdes Hospital, where he gave a demonstration on "Hypnosis as an Aid in Nursing;" he also addressed the Student Nurses Association of Delaware at their annual meeting at the YMCA; he was luncheon speaker at the New Castle County Ladies Auxiliary meeting held at the Academy of Medicine and spoke on "Modern Medical Hypnosis" . . . Addressing a press meeting in the Academy of Medicine to explain details of the Diabetes Detection campaign which was launched June 14 were: Mark Cohen, M.D., chairman of the drive, Marvin Dorph, M.D., president of the DDA and Edward Gliwa, M.D., representative of the Board of Health . . .

No Smoking Project

The Delaware PTA has been pushing the no-smoking project throughout the state. Mrs. Robert W. (Jane) Frelick is chairman. On May 16, a special closed circuit TV program was given in every public school in the state and private schools with access to the ETV station in Dover. This was repeated on two consecutive nights at 8:15 p.m. This is a worthwhile project—watch it!

Mental Illness Guide

A booklet designed primarily for physicians, has been developed by the AMA's Committee on Rating of Mental Physical Impairment. Reasonable quantities of "*Guides to the Evaluation of Permanent Impairment*" may be obtained without charge by writing to the Committee on Rating and Physical Impairment, 535 North Dearborn, Chicago, Illinois 60610.

Heart Releases

Available to physicians, hospitals, and medical schools, without charge from your local Heart Association are: The Winter-Spring 1967 issue of *Stroke, Current Concepts of Cerebral Vascular Diseases; Prescription for Life*, a new film designed as a basis for training courses in emergency heart-lung resusitation—now available on a rental or sale basis from your local association. The 16 mm, 48-minute color film provides detailed anatomic and physiological experimental and clinical information covering emergency resusitation.

Reprints of an article on "*Nursing in a Coronary Care Unit*," reprinted by the American Heart Association, covers instrumental equipment including the cardiac monitor, external pacemaker, and defibrillator. (*Heart Association Journal, Cardiovascular Nursing, January, 1967*)
A symposium on "*The Physiology of Muscular Exercise*," summerizing new knowledge in the field, (*American Heart Association*) is No. 15 in its monograph series. This may be obtained at $3.00 a copy from your local association or at the national office.

World Medical Association

The 21st World Medical Assembly will be held in Madrid, Spain, September 10-17, 1967. The 1968 Assembly will be held in Australia. The World Medical Association is a society of the free, professional medical associations of the free nations. Sixty national medical associations are members, including the AMA. Dues are $10 per year, including a subscription to the *World Medical Journal* and the privilege of participation in the World Medical Assembly each year. WMA Headquarters are 10 Columbus Circle, New York City, N.Y., 10019

Courses Announced

Postgraduate Courses

Temple University Health Sciences Center will hold two courses in "*Office Psychiatry and Psychosomatic Medicine.*" Coure 1, Basic Course; Course 2, Advance Seminar in Adult Psychiatry. These will start in the fall of 1967, held each Wednesday at the Health Sciences Center. The fee for Course 1 is $40; fee for Course 2 is $30. For further information, write: Barney M. Blind, Director, 230 W. Allens Lane, Philadelphia, Pa. 19119.

Medical Aspects Of Sports

A postgraduate conference on the medical aspect of sports is being sponsored by the University of Rhode Island and the Rhode Island Medical Society. It will be held August 17-18, 1967. Fee of $45 will be charged. Those interested in attending may write the University, Department of Physical Education, Kingston, Rhode Island.

Hypnosis

A graduate course in medical hypnosis will be offered to physicians and dentists by the University of Pennsylvania Graduate Division, School of Medicine. There will be 20 4-hour weekly sessions for a total of 80 hours beginning September 28, 1967. They will be given at the Institute of the Pennsylvania Hospital, 111 North 49th Street, Philadelphia, Pa., 19139. Write for information: Sidney E. Pulver, M.D., at the same address.

President's Page

LEGISLATION FOR LOANS TO VOLUNTARY GENERAL HOSPITALS

In Kent and Sussex Counties, hospitals that have recently expanded must expand again. Extended care facilities are needed. Emergency, laboratory and x-ray departments demand more space. Each voluntary hospital in Kent and Sussex must borrow to build.

Because of this financial necessity and because the citizens of Delaware should have proper care, the Association of Delaware Hospitals is planning to introduce into the State Legislature a bill for low cost loans for capital improvement in voluntary general hospitals.

Other legislation is being supported not only by the Association of Delaware Hospitals but also by the Medical Society of Delaware:

Senate Bill No. 157 "To provide standards for construction, maintenance and operation of hospitals."

A bill for licensure which would maintain the necessary standards in the state for public, proprietary or voluntary general and special hospitals;

Senate Bill No. 128 "An act to amend Title 31, Delaware Code, entitled 'Welfare,' by changing the definition of medical care and by providing for a medical advisory committee."

Actually the Amendment would give the Medical Advisory Committee, Department of Public Welfare (W. O. LaMotte, Jr., Chairman) both legal status and added scope;

Senate Bill No. 153 "An act to appropriate moneys to certain hospitals and the department of public welfare for certain health services."

This bill would give Delaware more matching federal funds under Title 19 of the Social Security Amendments.

The Association and the Medical Society have agreed to oppose:

Senate Bill No. 63 "An act to amend Title 31, Delaware Code, entitled 'Welfare,' to provide for the furnishing of medical care to the indigent and medically indigent."

This would render "chiropractic services" mandatory for payment under Title 19 in the same terms as "physician services;"

Senate Bill No. 64 "An act to amend Chapter 7, Title 24, Delaware Code, relating to the eligibility of chiropractic physicians for compensation from insurance, group hospital services and related plans."

This would make payment mandatory to chiropractors for services to patients under Workmen's Compensation, Blue Cross-Blue Shield, or other coverage.

In all of this legislation the Community Services Council and the Health Facilities Planning Council will work with the Association and the Society.

Changes resulting from State and Federal laws, population growth and medical progress all demand better communication between the public, hospital administrators and doctors. In reorganizing the Association of Delaware Hospitals with a full-time Executive Director, administrators and hospital trustees have acknowledged this need. Public and professional relations for hospitals and legislative affairs will receive greater attention in the Association's new program.

Since 1960, the Association of Delaware Hospitals and the Medical Society of Delaware have collaborated to accomplish substantial gains in the public interest, especially through legislation. This strengthening of the Association should lead to new mutual ventures and gains perhaps of greater public worth.

H. Thomas McGuire

The Physician and The Pharmacist

A monthly feature of the Delaware Pharmaceutical Society

POISON CONTROL

It is of special interest to all medical personnel to refer to a report for 1964 in which 56,097 cases of poisoning in children under five were recorded by the National Clearing House for Poison Control Centers. Of these, 51% were caused by medicine of which all but 6% was intended for internal use. It is estimated by officials that reported cases probably represent about 10% of actual occurrences.

This situation should call our attention to a very serious problem which will not be improved without a great deal of effort on the part of all who manufacture, prescribe or dispense medicinals or market chemicals for any purpose. In addition, a concerted and continuous effort should be made by drug information agencies and all educational units of the community to see that people are constantly informed of the danger that confronts them.

The health worker who has an opportunity to make a presentation before service clubs or other groups should make use of the ready information and prepared materials available to him from national organizations such as the American Medical Association and American Pharmaceutical Association. It should be kept in mind by all who prescribe or dispense drugs and poisons that the layman needs and desires information and will usually listen carefully to the informed professional.

There is no doubt that drugs are overused and as a result are held in some contempt by the layman. Aspirin is probably the outstanding example of this. It is constantly on hand in some form in nearly every home and in nearly every female purse in the country. Since this is so, it is apt to be thought of as innocuous. Ingestion by a child is often considered of no great consequence. Other commonly used substances such as cough preparations, cosmetics, cleaners and vitamins are thought of in the same way. There is also the great problem of substances stored in the home, oftentimes in unlabled, unstoppered food and drink containers which are commonly the cause of mistaken ingestion. Reports by Poison Control Centers for 1964 show that aspirin continues to lead the list as most frequent in child poisoning, with bleach, soaps and detergents, insecticides, vitamins, and iron preparations, next in importance in that order. It is felt that improved labeling alone would greatly reduce these figures.

Besides being well informed themselves and carrying on a continuing program of education, the physician and pharmacist of every community should aid in maintaining poison treatment centers in the numbers and locations that would best serve the particular community.

Since the misuse of drugs is the commonest cause of poisoning in the home, it is of vital importance that the physician and the pharmacist concentrate their efforts to reduce the number of cases in this category. Householders should be encouraged to discard old, unused drugs and containers, being careful that they do not fall into the hands of children.

Drugs should be secured in the home in places which are not accessible to children. No one should utilize medicine from an unlabeled container nor in the dark. With constant vigilance and education on our part we can help reduce many of the unfortunate circumstances that surround poisoning in our communities.

DRUG INFORMATION ABSTRACTS

This is a monthly series of drug information abstracts gathered from current articles and prepared by the pharmacists with the purpose of alerting you on drugs and/or their complications.

Librium

Thyroid Function Tests

The labeled tri-iodothyronine and I 131 tracer tests show spurious results in patients receiving Librium (Chlordiazepoxide-Roche). It is suggested that Librium acts as an antithyroid drug, an effect not previously noted in the literature.
Baron (Reading, Eng.) British M. J. 1:769 (Mar. 18, 1967).

Indomethacin

Asthma: (Indocin-Merck Sharp & Dohme) has been widely employed in treatment of such conditions as rheumatoid arthritis, ankylosing-spondylitis, osteoarthritis, and gout. Major adverse reactions associated with indomethacin therapy involve the central nervous system and the gastrointestinal tract. The present report concerns a case in which the ingestion of indomethacin was associated with an acute asthmatic attack in a patient with intrinsic bronchial asthma, nasal polyps, and aspirin sensitivity. The relationship between indomethacin administration and asthma was documented by challenge with the drug.
Vanselow & Smith (Ann Arbor, Mich.) Ann. Int. Med. 66:568 (Mar.) 1967.

Chloroquine

Delayed Retinopathy: The British Medical Journal again raises the question of delayed chloroquine retinopathy. Clin-Alert No. 4., (1967) the drug-induced ocular damage is apparently related to the amount of drug taken rather than the daily dose. It is noted that chloroquine is preferentially stored in the melanin-bearing tissues of the eye, where it remains long after it has been eliminated from other parts of the body. Even small doses exert a cumulative effect. If the pigment epithelium of the retina is damaged by chloroquine it may be less able to withstand relative ischemia due to arteriosclerosis, so that senile mascular degeneration may be another long-term effect of the drug.
Leading Articles, British M.J. 1:254 (Feb. 4), 1967.

New Cephalosporin Antibiotic-Cephaloridine

This report deals with use of cephaloridine in 86 hospitalized patients treated for a variety of severe infections, and describes its in vitro effects against common bacterial pathogens.

During the course of the study 6 patients developed serious Pseudomonas super-infections and 5 patients died.

Cephaloridine demonstrates higher and more sustained antibacterial levels in the blood than sodium cephalothin and is better tolerated following intramuscular administration. However, cephaloridine is more susceptible to inactivation by penicillinase.

Turck, Marvin; Belcher, Donald W.; Ronald, Allen; Smith, Ronald H. and Wallace, James F. (Department of Medicine, University of Washington School of Medicine and King County Hospital, Seattle, Washington)
Arch. Internal Med. 119:50-59 (Jan.) 1967.

Discontinuation of Long-Term Anticoagulant Therapy

The effects of discontinuing long-term therapy were studied in 149 patients. (The majority of patients had been placed on the anticoagulant for a previous myocardial infarction.) Forty-two patients remained on the drug and acted as a control group. A one-year follow-up suggests that anticoagulant therapy can be discontinued without risk of causing increased thrombotic phenomena.
JAMA June 27, 1966.

Rebound Thrombosis After Stopping Anticoagulants

This article reviewed the occurrence of a rebound hypercoaguable state after abrupt halting of anticoagulant treatment.

This problem was found in a significant number of cases only after long-term therapy, and it was concluded that there has been no sound justification for the gradual withdrawal of anticoagulants in routine, short-term therapy.
Anonymous, Brit. Med. J. 2:1343 (Dec. 3, 1966).

Auxiliary Affairs

PRE-SCHOOL SCREENING: A PROJECT OF THE NEW CASTLE COUNTY AUXILIARY

"Suzy, look at that chart on the wall and show me which way the "table legs" are pointing. Use your fingers, and point them the same way the legs are going. Very good. Now, when the lady moves the window, the legs point a different direction. Which way do they go this time?"

This is a sample of the painstaking process the Women of the Auxiliary to the New Castle County Medical Society go through as we "screen" pre-school children for vision defects. Using a Snellen E Chart and working in groups of three, one with the child, one at the chart, and one recording, we are able to test approximately one child per minute or two. We, of the Auxiliary, feel that this is a vital community service which we are rendering. Some of the children we detect with eye defects, such as Amblyopia, can be treated and cured when caught at the pre-school age. After the age of six, treatment is too late. From September 1966 to March 1967, we had screened some 2,000 children in New Castle County. Most of the nursury schools, kindergarten and all the Head-start Programs will have been screened by June. Thirty of these were referred for further professional examination. As the reports from the various doctors come in, we are finding that almost all of them required glasses and/or other treatment. The remainder probably will need them on the follow-up visit in six months. Such results seem to prove our efforts to be extremely worthwhile.

This "screening" program is sponsered by the National Association for the Prevention of Blindness. During the spring of 1965 the auxiliary conducted a pilot project of vision screening for one week. During this period 500 Head-start children were involved. The volunteers worked every day. This screening was preceded by a training course lasting 1½ days.

These leaders and their groups, who have devoted much time and effort for this community service include:

Mrs. Herbert Baganz with Mrs. Edward C. Donnell and Mrs. Martin Pennington; Mrs. John Barnhart with Mrs. John Howard and Mrs. Robert Wuertz; Mrs. Watler Comer with Mrs. Kenneth Corrin and Mrs. Douglas Gay; Mrs. Joseph DeLaurentis with Mrs. Joseph Davalos and Mrs. John Levinson; Mrs. George Henderson with Mrs. G. Dean MacEwen and Mrs. Robert Price; Mrs. Park Huntington, Jr. with Mrs. Howard Lovett and Mrs. Owens Weaver; Mrs. David Levitsky with Mrs. Mark Cohen and Mrs. James Lyons; Mrs. Christos Papastavros with Mrs. Stephen Bartoshesky and Mrs. Gustave Berger; Mrs. McHenry Peters with Mrs. Domenic Iezzoni and Mrs. Leslie Whitney; Mrs. Richard Raiber with Mrs. Joseph Arminio and Mrs. Howard Reed with Mrs. Christine Morris and Mrs. Rublee Soule. In addition several members have acted as substitutes when neccessary. These include: Mrs. Lewis Chipman, Mrs. G. Davis Durham, Mrs. C. E. Wagner, Mrs. Robert Waterhouse, Mrs. Alvin Wiener. None of this worthwhile, rewarding program which has added a new dimension to the lives of many of the volunteers would have been possible without the work of Mrs. Pierre LeRoy.

AMA IMMUNIZATION PACKAGE PROGRAM NOW READY

The package program on immunization contains complete information and materials for stimulating community understanding and interest in the value of protection against communicable diseases. Included in the materials are two speeches, one of which covers prevalent communicable diseases and immunization available. It is suitable for all age groups. Also in the package are film and pamphlet resource lists and suggestions for the proper use of the package.

Kits for promoting immunization have been mailed out to state and local medical societies by AMA headquarters. An explanatory sheet in the auxiliary immunization package explains how you can tie in your efforts with the campaign of your medical society.

Delaware Medical Journal

JULY, 1967

VOLUME 39

NUMBER 7

Editorial...

THE ROLE OF THE MODERN EMERGENCY ROOM

At the turn of the century, hospitals were small and scarce. The increase of surgical skills made it necessary for hospitals to grow and many were actually started by individual surgeons to provide facilities for operative surgery. Medicine, as opposed to surgery was still practiced in the physician's office and house calls to a patient at home was the order of the day. As the need for greater diagnostic tools, x-rays, and laboratory procedures grew, medical patients began to move into the hospital.

Presently, approximately 50% of hospitalized patients are on medical services. The house call is becoming a rarity. This is not because the doctor is too busy or because he is lazy; it is a simple fact that he can do more for the patient in his office. The art and science of medicine and its development has been responsible for the change in the technique of medical practice.

It is inevitable that the relationship of the hospital to the practice of medicine and the responsibility of the hospital to the community must also change. More and more patients go directly to an emergency room and then call their doctor or request emergency care from the emergency room staff.

To some, this seems all wrong. Studies are being conducted in an attempt to find a way to discourage the public from using the hospital as its emergency physician. Some believe that the hospital is interfering with the private practice of medicine; or followup care is poor. Additional complaints are that the hospital is actually practicing medicine. Many other arguments explain why this trend in the use of emergency rooms is bad and must be stopped.

The community may look at this in a different light. The hospital raises money by claiming to be a service to the community and asks for its support. Many hospitals are actually called community hospitals and therefore the community is going to demand the right to use it as it does other "public facilities." The precise ownership of the hospital is unimportant as it is not understood. In this country *Health and the Right to Medical Care* is now one of the fundamental rights of each citizen and is not restricted to privileged individuals. Like motherhood—health, hospital and emergency care, are equated with good by the public.

Recent federal legislation suggests that a poorly equipped emergency room will soon be subject to medical-legal action. All this suggests to your Editor that a very critical view should be taken of the future role of the hospital and the emergency room in a complex urban medical society. A hospital, with a well-equipped emergency room staffed to assist patients and their physicians in caring for the people of the community, may in the long run serve the community better than cries of outrage and resistance coming from the medical profession and the hospitals. Resistance, to what one might consider to be the will of the people, can only serve to delay the inevitable and run the risk of providing inadequate patient care during the transition period. The public is well aware of the fact that doctors can do more for them if backed by the facilities of a hospital and it is unlikely that they will permit doctors to treat them for emergency care in antiquated offices much longer. In many areas, physicians and surgeons have built their offices adjacent to or actually *in* the hospital.

TWO VENTILATING ATTACHMENTS FOR BRONCHOSCOPES

• An interesting and original description of two attachments for bronchoscopy—one, a device for ventilating the lungs while attached to a bronchoscope and another for performing both ventilation and administration of anesthetic vapors.

R. Douglas Sanders, M. D.

Anesthesia for bronchoscopy, utilizing thiopental to produce unconsciousness and succinylcholine to cause relaxation, has been widely used since its introduction about 14 years ago. After these drugs are given, the patient is hyperventilated with mask and bag for 3-5 minutes. Further increments of the drugs are given as indicated. While the operation is performed, oxygen is given through a nipple at the side of the bronchoscope, or a catheter placed in the trachea alongside the instrument.

During the procedure, life is sustained by "diffusion respiration". No matter how rapid the procedure or how skilled the operator may be, some degree of respiratory acidosis always occurs. Effective respiratory movement must be present if hypercarbia is to be avoided, for during apnea, CO_2 accumulates in the blood at a consistent rate.

Various mechanical means of providing periodic lung inflation during the procedure have been tried:

1. Artificial respiration by compression of the lower chest. This is ineffective, because partial lung collapse and shunting quickly occur, often leading to anoxia as well.
2. Cuirasse and wrap-around respirators. These are not very effective. They are cumbersome and applying them is time-consuming and frightening to the patient.
3. Channels built into the side of the bronchoscope connected to anesthetic apparatus.
   For effectiveness, this requires closure of the proximal end of the instrument by the surgeon's thumb during inflation.
4. Bronchoscope with proximal window closures, which must be positioned across the lumen by the surgeon while the anesthetist provides ventilation by delivering gases through a duct built into the side of the instrument.
   Several different models of these special-made instruments have been available for about 10 years.

Although No. 3 and No. 4 are effective, their use presents some disadvantages. The attention of the surgeon is divided between ventilation and operation. He must interrupt his work and remove forceps or sponge holder from the bronchoscope each time the lung is filled.

The developments reported here are of attachments which are applied to the proximal ends of otherwise unaltered bronchoscopes, utilizing the energy of compressed oxygen ex-

---

Dr. Sanders is Head, Department of Anesthesiology, Delaware Division, Wilmington Medical Center, Wilmington, Delaware.

Presented before the Academy of Anesthesiology, Sept. 27, 1966.

VENTILATING ADAPTERS FOR BRONCHOSCOPES

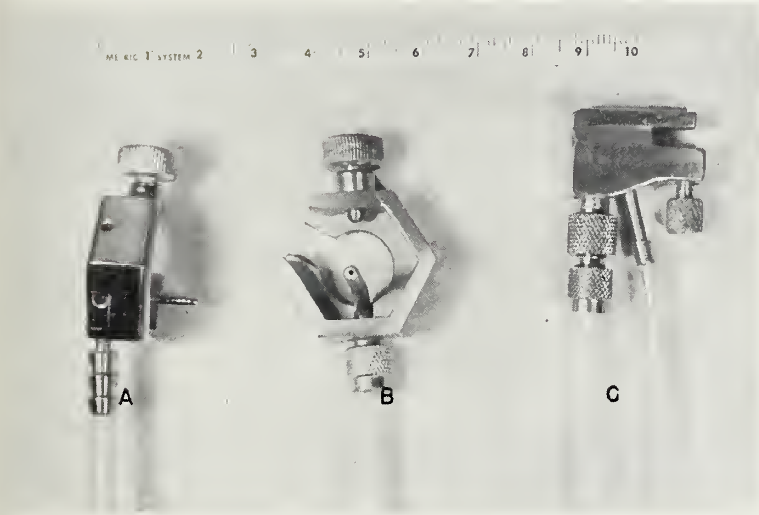


Figure I

A. Initial Model (1965)
B. Improved Model (1966)
C. Adapter built for application to many sizes of bronchoscopes with provision for entrainment of anesthetic vapors.

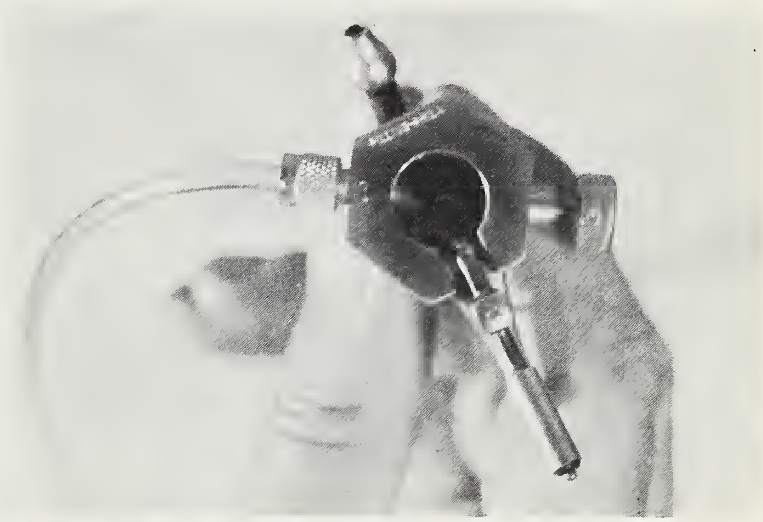


Figure II

Adapter applied to proximal end of bronchoscope.

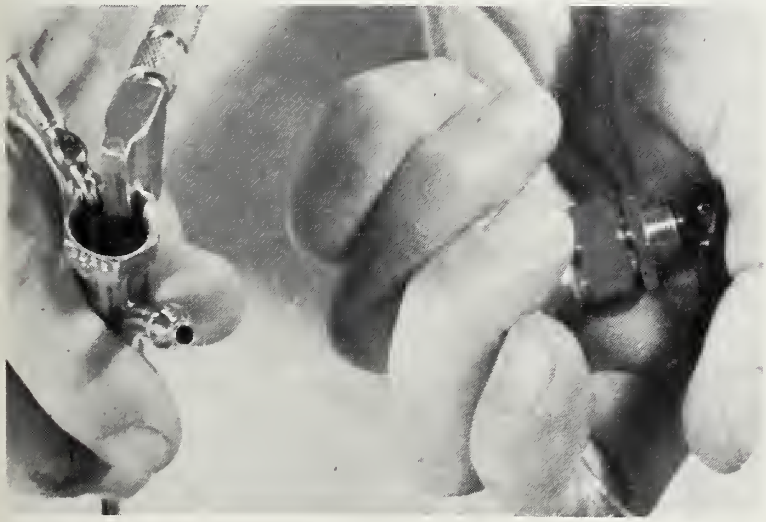


Figure III

Vapor entrainment adapter applied to 3.5x30 bronchoscope. Control valve for intermittent application of oxygen pressure.

TABLE I

Maximum pressures attained at distal ends of bronchoscopes with ventilating attachment orifice size .035″.

Pressure At Valve	*Bronchoscope Sizes* 3.5 x 30	5 x 30	6 x 35	7 x 40	8 x 40
20 P.S.I.	12	10	9	9	5.5
30 P.S.I.	20	18	15	15	12
40 P.S.I.	28	23	20	20	17
50 P.S.I.	36	30	25	22	21
50* P.S.I.	36	30	26	23	21
50** P.S.I.	42	25	26	24	22

*With sponge holder thru the bronchoscope
**With suction tip thru the bronchoscope

erted through an injection nozzle with pressure regulated and flow controlled by valves available in industry. Figs. I, II, and III

The attachments are designed to operate effectively at 50 lbs. psi, or less, since oxygen (the driving gas) is available only from wall outlets at this pressure in many hospitals. An injection orifice of .035″ was found to provide an effective range of pressures when used with one model of bronchoscope of adult size. (Pilling 7 x 40).

After further trail it was found that different sizes of injection orifices were required to be effective with different designs of bronchoscopes (Negus .043″). It was of particular note that when an attachment was applied to different sizes of the same model, far greater pressures were attained at the distal ends as the size of bronchoscopes decreased. (Table I and Fig. IV).

With wide variation in function, according to O_2 pressure at the attachment and size of

TABLE II

Pressure of Oxygen at Regulator	*Halothane % Delivered by Injector Alone*	*Halothane % Delivered from Bronchoscope to Which Injector was Applied*	
		8 x 40	3 x 25
10 lbs.	0.95% V/V		0.76% V/V
20 lbs.	1.24%	0.52% V/V	0.83%
30 lbs.	0.95%	0.36%	0.7%
40 lbs.	0.65%	0.26%	0.5%
50 lbs.	0.57%	0.21%	[illegible]

Percentages V/V of Halothane recovered from outflow of vapor entrainment adapter alone and when applied to different sizes of bronchoscopes. The vapor entrained was at 22°C. vapor pressure 265, or approximately 35% V/V. Flow and pressure functions with this adapter differ markedly from those shown in Figure 1 (A) and (B).

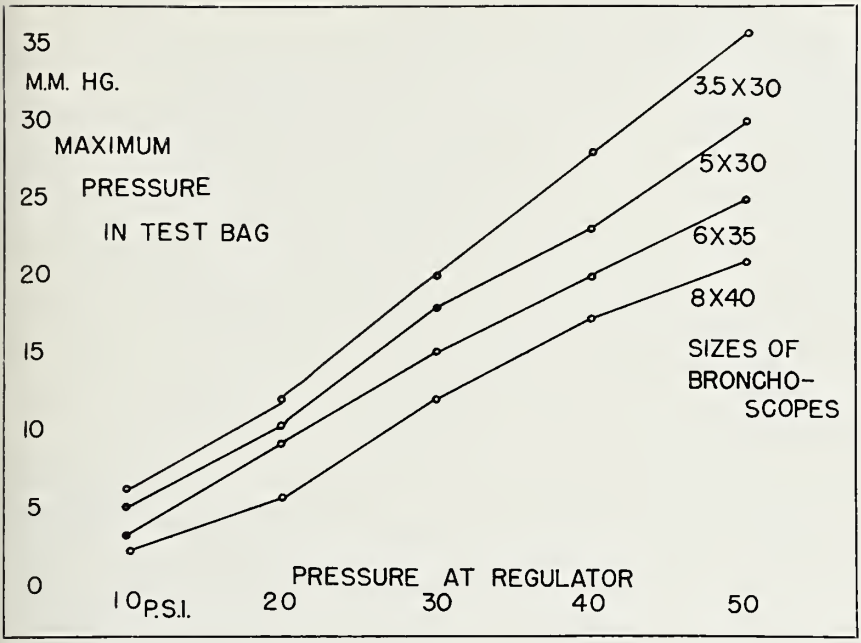


Figure IV

Chart of maximum pressures in a test bag attached to ends of bronchoscopes of different sizes with the adapter subjected to a variety of oxygen pressures.

bronchoscope used, it is necessary that O_2 pressure be controlled within limits of 5 lbs. psi. This is accomplished by a single-stage, variable pressure regulator where the O_2 supply source is a pipe line.

Where cylinders of compressed gas are used, a two-stage, unrestricted flow. variable pressure-regulator is used. The second stage of this regulator should have a safety pop-off valve.

Intermittent flow is accomplished by depressing the lever of a on-off valve, placed in the line connecting the regulator and the attachment. (Fig. III)

The ventilating attachment is made small, light, and applicable to several instruments of the same model. So far, attachments have been made for bronchoscopes with dilated proximal ends only. Flow and pressure characteristics vary greatly, according to the design of bronchoscope; thus, any new combination, especially with straight tube bronchoscopes, should be studied very carefully before clinical use.

Flow and pressure characteristics with a recent design of bronchoscope (Pilling) are shown. (Figs. IV and V.)

As the lung fills and back pressure increases, nearly all the gas delivered to the end of the bronchoscope is oxygen. Curve of this effect is shown. (Fig. VI.)

Technique

When they were premedicated, patients received hydroxyzine (Vistaril) and Atropine. Occasionally meperidine (Demerol) was given in addition. All were given in rather small doses. Some had no pre-medication, particularly the very old or very ill patients.

Light anesthesia was produced with thiopental 2%, intravenously, and further doses given as indicated.

Ventilation with O_2 was given for periods up to 3 minutes. Succinylcholine drip 1-1000 was given rapidly I. V., until the patient was paralyzed.

The bronchoscopist, having applied the ventilating attachment and tested it, then inserted the bronchoscope. The instrument entered the trachea, and the anesthetist ventilated the patient by depressing the finger valve periodically, about 20 times a minute, with the chest and hypogastrium bared to view, for judging effectiveness of ventilation. Further amounts of pentothal and succinyl-

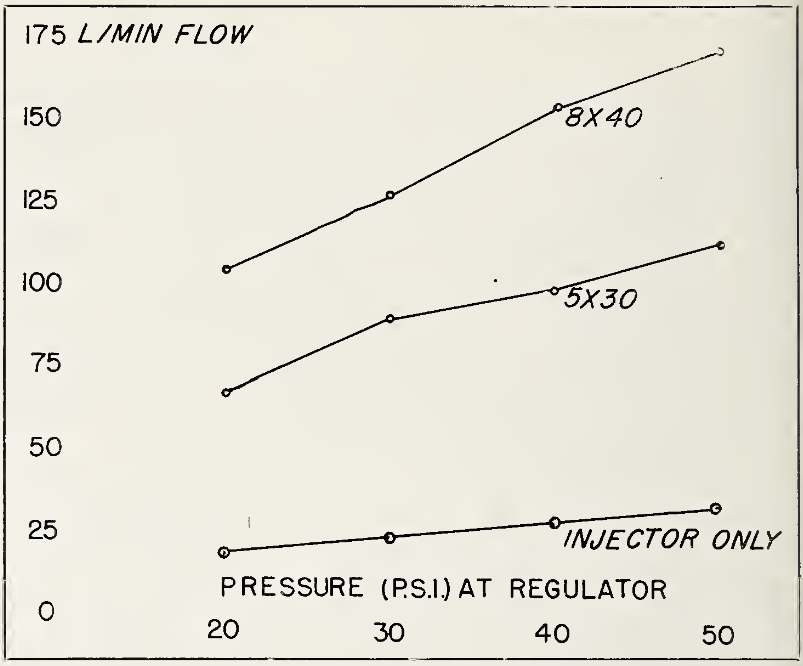


Figure V

Total flow thru bronchoscopes of two sizes compared with the amount coming from the injector only; at different pressures.

choline were given during the procedure, according to his judgement of need. Adequate ventilation could not be secured unless the patient was well relaxed.

After withdrawal of the bronchoscope, the patients were suctioned, ventilated with O_2 by mask and bag, and watched for any residual effects of succinylcholine. They were kept in the operating room until well reacted, often as little as five minutes.

Clinical performances

Total Cases	200
(50% were outpatients)	
Pentothal-succinylcholine used	173
Pentothal-succinylcholine + topical used	5
Pentothal-succinylcholine + Halothane used	2
Pediatric cases — Halothane and Anectine	10
Pediatric cases — Halothane only	5
Blood Pressure during procedure	
increased	92
decreased	4
no change	44
not recorded	60
Pulse increased	22
decreased	7
unchanged	98
not recorded	73
Operative time — maximum	35 mins.
minimum	3 mins.
average	8 mins.

The anesthetist should have a capable assistant throughout to check function of instruments, to take and record pulse and blood pressure, and to aid in giving medications. There would have been fewer instances of unrecorded data had such an individual always been present.

Clinical Impressions

Hypertension, when it occurred, happened too rapidly to be due to increased CO_2; but the rise was not as high or as prolonged as formerly seen when patients were not ventilated.

Pulse rates were slower than they were during even short periods of instrumentation with apnea. There were very few irregularities noted. Although some of the examinations were quite prolonged, there were no instances where operation had to be stopped because of rapid, irregular pulse. Before this, one often had to call time on the surgeon.

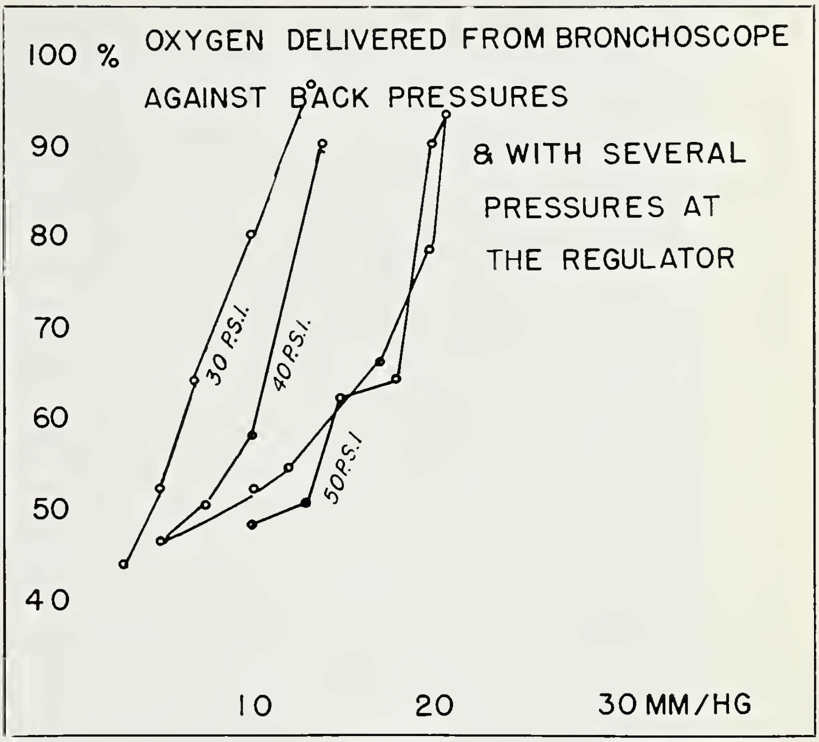


Figure VI

Changes in oxygen concentrations produced by restriction of out-flow from bronchoscopes. These were measured distal to the restriction.

Ventilation, as judged by movement of the chest and abdomen, was usually in excess of the patient's normal exchange. On inspection, bronchial movement closely resembled that of deep, normal respiration.

Secretions within the bronchoscope are moved very little by the injector stream.

The surgeons have been able to proceed with instrumentation, suction, and biopsy in a more precise and leisurely way without noticeable harm to the patient.

The pH, Pco_2, and PO_2 studies done on arterial blood indicate much better conditions at the conclusions of the procedure than when the patients were not ventilated. They demonstrate reduction in Pco_2, sometimes dramatically, and increased oxygen tensions.

Due to inadequate pentothal administration, or poor timing of doses, two patients reported being conscious during the procedure. They reported being frightened, but not especially uncomfortable, and they were not short of breath. One of these has since been bronchoscoped with complete satisfaction after receiving larger doses of thiopental.

One patient had such severe pulmonary disease that he was ventilated while being bronchoscoped under topical anesthesia. He reacted very well to the procedure.

Further developments

To take care of the very young or sick child, as well as the occasional adult for whom a volatile fluorocarbon anesthetic seemed preferable, another attachment for bronchoscopes was made. (Fig. I (C) and III)

With this, (1) ventilation is accomplished and (2) volatile anesthetics are entrained and delivered to the patient.

This device has now grown into a family; but the first, which has been used on all the pediatric cases and all those in whom halothane was used, has proven fairly effective.

Output concentrations of halothane, as determined chromatographically from the injector and from the injector coupled with bronchoscopes, are shown. (Table II.)

They are relatively low and have indicated further work, which is now proceeding. An

Continued on Page 192

THE BATTERED CHILD SYNDROME

• Any physician's practice may potentially harbor a battered child. This case is presented with the intent of sharpening the diagnostic acumen and increasing the index of suspicion; especially where socio-economic factors may have previously been considered clues to the possibility of child battering.

W. Scott Bolz, M.D.
Captain, United States Air Force

The battered child syndrome is a clinical entity that is increasingly becoming a part of each physician's diagnostic repertoire, but which, unless constantly kept in mind, can be easily overlooked. A misinterpretation of more often than not confusing clinical and laboratory findings can be fatal to a child, or result in serious injury or debilitation at an extremely early age.

Often, it seems, clinicians are inclined to give parents of possibly battered children the benefit of the doubt through relegating this diagnosis to a position of little weight among the working diagnoses utilized in the case. This is especially true if the family circumstances appear to make such a diagnosis unlikely. Admittedly, the social and legal situation can be bewildering and the physician is left with an unsatisfactory means of obtaining an adequate history and of definitively handling the problem. This brief exposition can offer little aid in the carrying-out of the delicate social and legal responsibilities inherent in any such case once the diagnosis has been made other than reporting it to the police or other proper authorities.[12] It is hoped that the following discussion will familiarize the reader with the syndrome.

Finally, it is intended that one point be driven home throughout this paper: that socio-economic circumstances are best disregarded as clues to the possibility of a battered child. This syndrome occurs in families regardless of such factors. In an article in *Social* Work, Boardman states that in the population of Los Angeles there is no confinement of child battering to any race, religion, or cultural or economic group.[10]

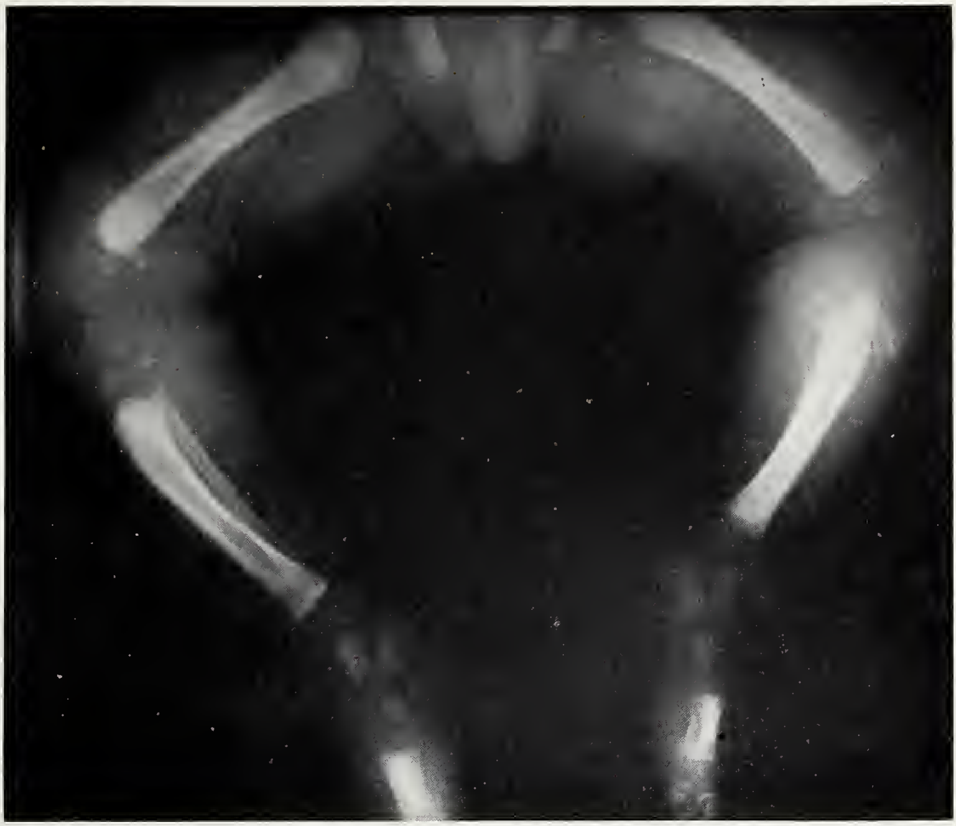
The case reported here occurred at Dover Air Force Base in Delaware, an example of a large population with government subsidized and controlled health care, follow-up, and preventive medicine. Also, in comparison to the population as a whole, Air Force personnel are thought to be a fairly select population of younger, healthier people of a reasonably good socio-economic background. This child was born in the base hospital and seen frequently in its outpatient department in the few weeks of its life.

Case Report

A three-weeks old Negro girl infant was first seen in the outpatient department for hyperemia of the scleral conjunctivae which arose when the baby bumped her head allegedly by falling onto her father's chest. At the age of five weeks the baby was seen again for a swelling of the right leg and a low grade fever. The history was that the child had had

---

Dr. Bolz is Chief of Surgery, Dover Air Force Base Hospital, Dover, Delaware.



X-ray of both lower extremities was taken post-mortem and shows metaphyseal fragmentations and calcifications of the distal femoral and proximal tibial metaphyses bilaterally. Also periosteal elevation with subperiosteal calcification is seen in the same areas, especially on the right. The left distal femoral and right proximal tibial epiphyses appear to be displaced from their normal positions.

a diaper rash and diarrhea for about two weeks prior to this visit, and the parents had noted swelling of the right buttock one week before, followed by swelling of the right thigh. The child's mother also observed that she did not move her right leg well. At one point the father volunteered that he had manipulated both feet because he thought they were turned in and he had heard of the exercises for metatarsus adductus which had been prescribed for other infants at the base who actually had this condition.[2] The baby was admitted from the clinic to the pediatric ward at this time where physical examination demonstrated a ¼ by ½ inch area of induration of the right buttock and minimal edema and cellulitis of the right thigh and crepitation of the right knee. The child was begun on antibiotics and warm local soaks, since a working diagnosis of an abscess of the right buttock had been made. The temperature was 100 degrees rectally and the leukocyte count was 11,800. X-rays of the right hip and femur were normal. The baby improved daily in the hospital, and though a urinalysis showed 30 white blood cells, subsequent urinalysis and culture were negative. Finally, on the sixth hospital day the infant was discharged on oral penicillin to be seen in the clinic in one week.

Six days after discharge the baby was seen in the pediatric clinic as scheduled and the physical examination was entirely normal. At this time the record stated that the mother was probably overfeeding the baby and she was instructed in proper feeding.

HEALTH SCIENCES LIBRARY
UNIVERSITY OF MARYLAND
BALTIMORE

That same evening the baby was seen in the emergency room with the parents complaining that she did not move her legs well and that she was spitting up her food. Physical examination elicited a clicking sensation over the left anterior chest on palpation. The examiner also observed that the baby was alert but did not move either leg well. The case was discussed with the pediatrician and it was recommended that the parents bring the baby to the pediatric clinic early in the morning. No x-rays were taken at this time.

The next day at about noon the baby, not having been taken to the clinic as ordered, was brought to the hospital by ambulance dead on arrival with the history that the child went to sleep the previous night with some swelling of the left knee, awoke at seven in the morning and was fed and put back to bed. At 11:45 A.M. the baby was allegedly found cold in bed and the ambulance sent for. On physical examination at this time, both knees were swollen enough to prevent bending and x-rays now showed a fractured rib on the left side of the chest and metaphyseal calcifications of both knees. The clinical impression of the x-rays at that time was of either congenital rubella or syphilis. However, the radiologist's final report, while raising the other two points, noted that the fractured rib in association with the metaphyseal calcifications of both distal femora and proximal tibiae raises the possibility of a traumatic origin for the changes.

The autopsy, however, was unequivocal, showing that the cause of death was anoxia due to exsanguination from a large laceration of the liver. In addition, there were hemorrhages in the pancreas, intestines, retroperitoneal space, brain, thymus, lungs, heart, and old ones in the left buttock and pelvis. There were fractures of the left sixth rib and the left hip. There was also edema of both knees. These findings obviously implicate massive, repeated trauma totally unexplained by the accompanying history.

Discussion: Clinical Findings

A general statement, that well summarizes the type of case in which one should be most suspicious of the possibility of a battered child, is that situation where the child's predicament cannot be explained by the history given, or it does not fit the known clinical picture of any other syndrome or disease state.[3] Frequently, the fractures and other injuries found are accompanied by a facetious explanation by the parents, or, as has upon occasion proved to be the case, the baby-sitter.

The common presenting symptoms and signs of the battered child syndrome are a swollen limb or joint with local tenderness and an unwillingness of the child to move the joint.[9] Also, there may be gross fractures or symptoms of a subdural hematoma. Any evidence of neglect or trauma, malnutrition, poor skin hygiene, or, obviously any of the forementioned signs should immediately pique the attendant physician's curiosity as to whether he is dealing with a case of child battering.[1] Also multiple bruises in various stages of healing are to be suspected. Fractured ribs are almost always due to trauma and a satisfactory explanation should accompany them.[4] Commonly the injuries are to the extremities, and an area of cellulitis should be x-rayed to rule out a fracture. In addition, burns and injuries to the abdominal viscera may be found.[4] Typically the routine laboratory studies show an elevated white count, and other examinations are usually normal. Often there is a low grade fever present which with the elevated leukocyte count suggests osteomyelitis but the x-rays do not confirm this impression. One interesting feature of this syndrome is that the patients almost invariably get well in the hospital and no new lesions appear as long as they are hospitalized.[6]

X-Ray Findings

The one most important aid in making the diagnosis of a battered child is the proper use and interpretation of x-rays. The physiologic basis of the x-ray findings which are diagnostic is that the periosteum in infancy is more loosely secured to the parent shaft since Sharpey's fibers are scant here in infants, and it is more readily subject to stripping by shearing forces and hematomas than in older children and adults.[8] The initial injury leads to the formation of a hematoma and this results in further periosteal elevation. In these infants new bone forms in the hematomas, which is somewhat remote from the underlying bone, and this striking on x-ray.[1]

The injuries are commonly produced by grasping the extremities and shaking or twisting them due to their accessability which accounts for these sites presenting the most frequent lesions in the battered child syndrome. Usually the torsion resulting from such insults to the childs extremities leads to epiphyseal separation and periosteal shearing. Metaphyseal infractions or fragmentations also occur due to the fact that the periosteum is so firmly attached to the metaphysis and it pulls off fragments of it.[8] Siffert[7] reproduced traumatic displacement of the distal humeral epiphysis in stillborn infants by hyperextension of the elbow and by backward thrust on the forearm at the elbow with the latter in 90 degrees flexion.

Timing is important, for in battered children the injuries are almost always repetitive and will present as such on physical examination and roentgenograms. Reparative changes can be seen as early as twelve to fourteen days after the injury in infants on x-ray. Thus, even in a very young infant if traumatic events occured at different times they can be seen on x-rays. Indeed, skeletal trauma in varying stages of healing in an infant or young child seen on x-ray makes the positive diagnosis of this syndrome unless another explanation for the trauma is known by the physician to be the case. One should x-ray the entire skeleton of any baby who dies suddenly and unexpectedly.[1]

Specifically, the radiographic features associated with the battered child syndrome include overt fractures, irregular mineralization in the metaphyses of long bones with some malalignment of the accompanying epiphysis, calcifying subperiosteal hemorrhages, widening of the shafts of long bones or thickened corticos resulting from healed subperiosteal reactions, and subdural hematomas, whether associated with fractures of the skull or not.[1]

Differential Diagnosis

The changes in the skeleton of a baby, subject to repeated unrecognized trauma seen on x-rays, are most nearly duplicated by those seen in children with paraplegia or congenital indifference to pain. However, these conditions are sufficiently distinct and unusual as to be useful (mainly in this discussion) to illustrate the pathophysiology of the lesions characteristic of the battered child syndrome. Diseases which warrant consideration in the differential diagnosis of this syndrome are rickets, scurvy, osteogenesis imperfecta, congenital syphilis, osteomyelitis, and infantile cortical hyperostosis.

Rickets, in which fractures of the long bones can be found on x-rays, is characterized by cupping and fraying of the ends of long bones, especially the radius and ulna; a wide, noncalcified metaphysis in this region; a history of inadequate vitamin D intake; and a low serum phosphorus, increased phosphatase, and normal calcium. Also there are the visible stigmata seen in advanced cases such as curvature of the limbs and the rachitic rosary.[11]

On the other hand, scurvy is demonstrated radiographically to have calcified subperiosteal hemorrhages which make it more similar to the battered child syndrome, but it is distinguished by the fact that it is a generalized disease and all the bones show signs of osteoporosis. In the battered child syndrome the dietary history is, in contrast to rickets and scurvy, usually not sufficiently abnormal to implicate those diseases.[1]

In osteogenesis imperfecta x-ray changes similar to those of traumatic origin are seen but again it is a generalized disease state in which all the bones are affected. The mosaic pattern of skull ossification is not seen in the battered infant. Fractures in osteogenesis imperfecta predominate in the shafts of long bones, while in the battered child syndrome the traumatic lesions are more often epiphyseal. Of course, osteogenesis imperfecta can also be differentiated by the classic blue sclerae and a positive family history.[1]

The diaphyseal lesions of infantile cortical hyperostosis contrast again to the metaphyseal and epiphyseal changes seen in the battered child syndrome. Also the mandibular involvement is not related to trauma in the former.[1]

Osteomyelitis is characterized by involucrum and sequestrum formation which is not seen in the battered child syndrome. Neither is there a destructive process of the bone itself in the latter as there is in osteomyelitis. Tuberculosis should be ruled out by the use of skin testing.[9]

Congenital syphilis has its similarities to the battered child situation, but in syphilis, although there are metaphyseal lesions, they are symmetrical. Also, the other clinical stigmata of the congenital syphilitic and the positive serology almost always found, distinguish this condition from the battered child.[1]

Thus it can be seen that the astute clinician with the proper diagnostic work-up can make the diagnosis of the battered child syndrome, for the other conditions likely to be confused with it are distinguishable from it. The diagnosis can be made in spite of the lack of a history or the presence of a contradictory one. The other ingredient required in order to establish this diagnosis is a high index of suspicion, which, when coupled with the diagnostic evidence, can certainly aid in the prevention of the progressive deterioration of hapless infants subject to the senseless trauma inflicted by certain adults.

Summary

A case history of a battered child whose condition was only recognized after death was presented with accompanying diagnostic criteria including clinical and radiographic findings, and the differential diagnoses to be considered in this syndrome's work-up. The pathophysiology of the syndrome was alluded to with emphasis upon the production of lesions in the extremities, and the reasons for their frequency there. Special emphasis was made to establish the point that the diagnosis can be missed unless one keeps a vigil for the syndrome and pays little attention to the history provided or to the socio-economic background of such patients. Especially note-worthy is the fact that this case occurred in an Air Force family in central Delaware, thus happening in socio-economic and medical circumstances which, in the examining physicians' minds, apparently did not seem to be conducive to the genesis of this syndrome.

Conclusion

Each physician's practice potentially harbors a battered child and he must be aware of this possibility and be prepared to make the diagnosis and report the case to the police or proper authorities once the diagnosis is made.

REFERENCES

1. Kempe, C. H., Silverman, F. N., Steele, B. F., Droegemueller, W., and Silver, H. K. "The Battered Child Syndrome," *JAMA,* 181:17-24. July 7, 1962.
2. Ponseti, I. V., and Baker, J. R., "Congenital Metatarsus Adductus: The Results of Treatment," *Journal of Bone and Joint Surgery.* 48:702-11. June, 1966.
3. "The Battered Baby," *British Medical Journal,* 5487:601-3, March 5, 1966.
4. Gwinn, J. L., and Barnes, G. R. "Radiologic Case of the Month," *American Journal of Diseases of Children,* 109:457-8, May, 1965.
5. Haas, I. "Injured Baby," (Correspondence) *British Medical Journal,* 5462:645, September 11, 1965.
6. Griffiths, D. L., and Moynihan, F. J. "Multiple Epiphyseal Injuries in Babies," *British Medical Journal,* 5372:1558-61, December 21, 1963.
7. Siffert, R. S. "Displacement of the Distal Humeral Epiphysis in the Newborn Infant," *Journal of Bone and Joint Surgery,* 45:165, 1963.
8. Altman, D. H., and Smith, R. L. "Unrecognized Trauma in Infants and Children," *Journal of Bone and Joint Surgery,* 42:407, April, 1960.
9. Gwinn, J. L., Lewin, K. W., and Peterson, H. G. "Roentgenographic Manifestations of Unsuspected Trauma in Infancy," *JAMA,* 176:926-9, June 17, 1961.
10. Boardman, H. E. "A Project to Rescue Children from Inflicted Injuries," *Social Work,* 7:43-51, January, 1962.
11. Nelson, W. E. *Textbook of Pediatrics.* Philadelphia: W. B. Saunders Company, 1959.
12. Moore, D. K., Governor: *The Governor's Conference on Child Abuse,* North Carolina Health Council, Raleigh, N. C., 1965.
13. Russell, P. A. "Subdural Haematoma in Infancy," *British Medical Journal* 5459:446-8, August 21, 1965.

REPRINTS AVAILABLE

Reprints of the proceedings of a Combined Clinical Staff Conference at the NIH, published in the Annals of Internal Medicine, are now available to interested physicians on request. *Pheochromocytoma: Current Concepts of Diagnosis and Treatment,* (Vol. 65. No. 6 December 1966). Address your request: Clinical Center Information Office, N.I.H., Room 1-N-248, Bldg. 10, Bethesda, Maryland 20014.

MENINGITIS DUE TO LISTERIA MONOCYTOGENES

A Case Report

Charles Allen, M.D.

A 15-year-old negro girl, a high school student, was brought to the Kent General Hospital by her parents in an unconscious state.

The mother stated that the child was well, worked at her usual summer job the day prior to admission, and had actually attended a dance the night prior to admission. At 1:00 A.M. on that morning she fell out of bed, at which time, the mother noted that she was acting peculiarly and was not speaking. She was then observed by her parents for an hour, and brought to the hospital at 3:00 A.M.

There was no recent history of nose or throat infections, drainage from the ears or sinuses, headache, fever, chills, or any recent head injury. One significant fact brought out later in the history from the patient was that she had visited her uncle's farm a week prior to admission and that her uncle raised rabbits.

The past history of the patient revealed no unusual illnesses. She was intelligent, did well in school, and had received all her innoculations, including poliomyelitis vaccine. The family history revealed the mother and father were in good health. There was no family history of diabetes, tuberculosis, cardiovascular disease, and at the time of the patient's illness, no one at home had any contagious or infectious diseases.

Physical examination on admission revealed a well-developed, well-nourished negro girl, obviously delirious. She was hypermanical, unresponsive to the spoken word, but responded with generalized motor activity to pain or even light touch. Blood pressure was 130/72, pulse, 120 and regular, respirations, 24, and temperature was 102° rectally. Skin: warm and dry; no generalized or localized eruptions noted; no petechial eruptions noted on the skin, mucous membranes, or subungal areas. Eyes: revealed the left pupil to be widely dilated and much larger than the right; both pupils, however, responded to light. Fundoscopic examination revealed no papilledema, hemorrhages, exudates, or other abnormalities. Sclera were muddy, but not icteric. Ears: canals were clear; drums were intact; there was no discharge from either ear. Note: airways were open; no purulent drainage or obstruction noted. Mouth: revealed carious teeth; no petechiae were noted in the buccal mucosa or pharynx; there was no injection or purulent discharge noted in the throat. Neck: showed marked nuchal rigidity with a positive Kernig's sign present. Brudzinski's sign could not be elicited, but this was probably due to the patient's hyperactivity. Chest: good diaphragmatic movements. The lungs were clear to percussion and auscultation. Heart was not enlarged to percussion; the heart sounds were of good quality; there was a regular rhythm with a tachycardia of 120 per minute; no murmurs were noted. Abdomen was soft, nontender, no organs or masses were noted; bowel sounds were active. External genitalia revealed no abnormalities.

Dr. Allen is Consultant in Cardiology, Co-director of Intensive Care Unit, Kent General Hospital, Dover, Delaware.

There was no generalized or localized lymphadenopathy present. Extremities: no peripheral edema, varicosities, ulcerations, clubbing, or cyanosis noted; peripheral pulses were good. Neurological examination revealed the patient to be delirious; the cranial nerves were abnormal as noted above with left pupil dilated and responding slowly to light; no other localized cranial nerve abnormalities were noted. The deep tendon reflexes were hyperactive but equal throughout with the exception of both knee jerks being sluggish. There were bilateral extensor toe signs and a Hoffman's sign was present on the right. Due to the patient's delirious state, sensation could not be tested other than that the patient responded to painful stimulation throughout her body.

Laboratory data: Immediately upon admission, a lumbar puncture was performed and revealed an opening pressure of 280 millimeters of water. The spinal fluid was grossly purulent. A gram stain on the sediment revealed one small clump of what appeared to be gram-positive diplococci. The cell count on the spinal fluid revealed 8000 white cells per cubic millimeter, 100 per cent polymorphonuclear cells, the sugar was 28 milligrams per cent (with a corresponding blood sugar of 85 milligrams per cent), protein was 200 milligrams per cent. A blood urea nitrogen was 8 milligrams per cent. Hemoglobin was 10 grams per cent, hematocrit, 33 per cent, white blood count on admission, 15,200. Differential revealed 63 per cent segmented polymorphonuclear cells; 21 per cent stab cells; 1 juvenile cell; 15 per cent lymphocytes. Protein electrophoresis revealed a total protein of 7 grams per cent: albumin being 3.4 grams; alpha-1 globulin, .25 gram; alpha-2 globulin, .6 gram; beta globulin, .6 gram; gamma globulin, 2.14 grams; A-G ratio was 1.09 to 1. Urinalysis was grossly bloody, but the patient was menstruating at the time (a repeat urinalysis before discharge was completely within normal limits). A VDRL was nonreactive, and a repeat spinal tap two weeks after the initial spinal tap revealed no cells, a sugar of 75 milligrams per cent, and a protein of 15 milligrams per cent. Chest x-ray revealed no abnormalities of the lungs or cardiac contour.

Course in the Hospital: This patient was admitted at 3:00 A.M. with a history of only two hours' illness. She was obviously delirious and required restraining lest she injure herself. The temperature on admission was 102° rectally, but within two hours, was 106.2° rectally. It was very apparent that she had a purulent meningitis, and within 20 minutes after her admission to the hospital, she was started on intravenous fluids and antibiotics in the form of dextrose and water, 3 grams of chloramphenicol, and ten million units of penicillin in each liter of fluid. Over the first three days in the hospital, she received three liters of this mixture per day.

Her first two days in the hospital were extremely stormy with a wild delirium and questionable small seizures noted by the nurses. The morning of the third day, she was quieter, appeared stuporous, responding to pain but still having no localizing signs other than unequal pupils. Bilateral extensor toe signs were still present two days after admission, and the nuchal rigidity was still rather marked. By the evening of the third day in the hospital, she responded to simple verbal commands, but was quite restless. She remained febrile for the first eight days in the hospital. By the fourth day in the hospital, she was taking fluids slowly, and it was noted that her right eye was somewhat swollen and puffy. At that time, she demonstrated her ability to read and write, was well oriented in all spheres, and had absolutely no localizing neurological signs. On that day also, it was noted for the first time that her pupils were equal and responsive to light and accommodation. By the seventh hospital day, she was able to take the chloramphenicol by mouth (three grams per day), but her penicillin was continued at a dosage of twelve million units per day by intramuscular route. It was on the seventh hospital day, when her cultures were about to be discarded that the report came back of a probable contaminate in the spinal fluid cultures. This organism was recultured, and identified as a *Listeria monocytogenes*. A further reculture in an attempt to implant the organism into the conjunctival sac of a rabbit resulted in loss of the culture, and this final step was never accomplished. The organism was described as a pleomorphic gram-positive rod which grew rapidly in the refrigerator, and on motility studies was actively motile in a "tumbling fashion."

By the ninth day in the hospital, the patient was afebrile, and on the fourteenth day, antibiotics were stopped. On the sixteenth day, a lumbar puncture was repeated. The opening pressure was 240 millimeters of water, the closing pressure was 150 millimeters of water, and 15 centimeters of crystal clear cerebro-spinal fluid was obtained, the results of which are recorded above.

The patient was checked by me in the office over the following two months, and repeated neurologic examinations revealed that there was no detectable residual effect from her meningitis. She resumed school in September, two months after her meningitis, and was lost to eventual follow up. A report from her mother's physician reveals that the patient is doing extremely well and has done so in the sixteen months since her last examination by me.

Discussion

The genus Listeriae are gram positive microaerophylic motile rods. The motility is classically described as an active, tumbling motion. From culture, they are frequently described as club-shaped gram-positive rods resembling diptheroids. The colonies are sparse on original culture and are frequently overlooked as contaminants.[1] Another unusual aspect of this organism is that it is often grown better in the cold and actually, if the organism is suspected, an initial incubation should be placed in the refrigerator which will show an active growth within 48 hours.[3]

This bacterium has been identified as an infectious agent in thirty different wild and domestic animals which seem to be nature's reservoir.[2] Rabbits are frequently infected, and as noted, our patient did have contact with rabbits while visiting her uncle's farm. The usual infection in a rabbit is a purulent conjunctivitis which is frequently used as a laboratory aid in further identifying the organism. It is one of only two organisms which can cause a rapid purulent conjunctivitis when innoculated into the conjunctival sac of a rabbit.

The usual infections in humans are fetal listerosis with transplacental transmission from the mother's genital tract, and as in our patient, leptomeningitis. This meningitis is indistinguishable from other purulent meningitides except by the above-described culture techniques and probably is overlooked as often as it is identified, as nearly happened in this patient. Several cases of fatal meningitis have been reported which emphasize that this is as serious as any of the more common bacterial meningitides.[1,3,4] The world literature reports a fifty per cent fatality in the 150 cases reviewed by Graber, et al.[3] The reported abruptness of the onset of the meningitis as the presenting symptom was well demonstrated in this patient as she was well and healthy two hours before fortunately falling out of bed and awakening her mother.

The patient was started on high doses of antibacterial agents immediately upon admission with the mistaken belief that this was likely a pneumococcal meningitis because of the small cluster of gram-positive cocci demonstrated on gram stain. The organism is sensitive to most of the commonly used antibiotics including penicillin, erythromycin, streptomycin, chloramphenicol, sulfonamides, and tetracyclines. The usual "triple therapy" of penicillin, chloramphenicol, and sulfadiazine or streptomycin used with bacterial meningitides of undetermined etiology would seem the best course to follow. Early treatment, as in all bacterial meningitides, should be stressed. This patient was treated promptly, with therapy actually being started in the Emergency Room after her spinal tap, and she still required eight days before regaining full consciousness.

Because of this organism's pleomorphism, the pneumococcus can be easily confused on direct smear, but actually this would have little clinical importance since penicillin would be the drug of choice for the pneumococcus and is usually effective in the treatment of Listeria infections. The newer antibiotics and synthetic penicillins have not been reported in clinical cases because of the sparsity of reported cases, but *in vitro* studies indicate that

Continued on Page 192

WHAT THE SOCIAL SECURITY DISABILITY PROGRAM MEANS TO YOU AND YOUR PATIENTS

• The following article was prepared to better inform Delaware physicians on the procedures and rules set forth by Social Security on caring for disabled persons.

MARTIN B. PENNINGTON, M.D.

In 1965, social security coverage was extended to physicians in private practice. Its disability protection can be a valuable supplement to your present disability coverage.

In the social security disability program, a person under 65 who is too physically or mentally disabled to work may receive up to $152 in monthly benefits. If he has dependents, family benefits can go as high as $339 a month.

Benefits can now be paid to a person whose disability has lasted or is expected to last for 12 months or longer, or to result in death. (Formerly, a person was eligible only if his impairment was expected to continue for a long and indefinite time, or to result in death.) This liberalized provision benefits a large number of persons disabled by non-permanent impairments resulting from accident or illness.

Already, in Delaware, some 2615 disabled persons and 1749 dependents are receiving about $313,221.00 a month in social security disability benefits. Nationwide, over a million disabled persons-plus about a million dependents—are getting payments of about $1.75 billion a year from the program.

You may have patients who are missing out on benefits because they are unaware of the provisions of the law. You can perform a valuable service for them in this regard. If there is any possibility of their being eligible for these benefits, refer them to a social security office for further information. You can also help speed the decision on your patient's claim by promptly responding to his request that you report the medical data from your records needed to evaluate his disability.

Here, to give you a better understanding of how the program relates to your practice, are answers to the questions physicians most frequently ask about the social security disability program.

Advising Patients

Where do I send a patient to inquire about disability benefits?

Refer him to his social security office. If he cannot get there because he is in a hospital or is unable to leave home, the office will send a representative to visit him.

What do you mean by "disabled"?

A "disabled" person is one who has a physical or mental impairment that prevents him from doing not only his usual work, but any substantial work in keeping with his age, education, and experience. (Several provisions apply to a totally blind person: for instance,

---

Dr. Pennington is Chief Medical Consultant for Disability Determination Services, Social Security Administration and for Vocational Rehabilitation, State of Delaware.

even if he is able to work, he can have his social security earnings record "frozen" to protect his future benefit rights; also, if he is 55 or over, he may qualify under a special definition of disability. For further information, inquire at a social security office.)

Is the impairment the only factor in determining disability?

Not always. Although a person is considered disabled only if his impairment is the primary reason he can't work, consideration may also be given to such factors as his age, education, training and work experience.

In most cases, a person who is found disabled has an impairment so severe that his condition alone shows he cannot work. But it is possible for a person to be considered disabled because of a combination of medical and vocational considerations. This occurs when the medical condition prevents him from doing his usual work and — considering his age, education, and previous work experience—he cannot be expected to do any other type of work.

Are benefits paid only in cases of permanent disability?

No. Benefits are paid if the disability has lasted or is expected to last at least 12 months or to result in death. This covers non-permanent impairments resulting from accident or illness as well as chronic conditions.

How soon can benefits start?

Benefits begin after a waiting period of 6 full calendar months following the onset of disability. Therefore, the first payment is for the 7th month after the month in which a person became disabled.

What about a person who did not apply for benefits while he was still disabled? Can he receive any back payments now that he is recovered?

Yes. Even a person who has returned to work may be eligible for some benefits if severe disability prevented him from working for at least 12 months. However, the longer the delay between his recovery and his application for benefits, the fewer months of back payments he can receive. If more than 14 months elapse after he recovers and before he applies, no benefits are payable.

A cardiac patient who gets angina on slight exertion tells me you turned down his claim. How come?

Probably for a non-disability reason, such as his not having worked long enough in jobs covered by social security to meet the disability earnings requirement. To acquire disability protection, a worker must generally have social security work credits for at least 5 of the 10 years preceding the onset of his disability. (Note: Persons disabled by blindness before age 31 may need less than 5 years. Inquire at a social security office for further information.)

What are the most common impairments among workers who are found disabled?........

The most frequent causes of disability have been: arteriosclerotic heart disease (including coronary disease), emphysema, schizophrenic disorders, hypertensive heart disease, pulmonary tuberculosis, osteo-arthritis and rheumatoid arthritis. These conditions may help you identify patients likely to be qualified for benefits. But don't feel that they limit you in any way. Send any patient you think might qualify to his nearest social security office.

How about someone who has never been able to work—someone disabled since birth, for instance?

Under the "childhood disability" provisions, a person continuously disabled since before age 18 can receive disability benefits starting at age 18 or later. He need not have a work record of his own. Benefits can be based on the earnings record of either parent. Payments begin when a parent covered under social security dies or becomes entitled to disability or retirement benefits. Benefits can continue as long as the son or daughter remains disabled.

The most common causes of disability in this program are mental retardation, epilepsy, cerebral palsy, congenital defects, and late effects of acute poliomyelitis, congenital syphilis and acute encephalitis.

The Disability Decision

Who determines whether or not a person is disabled?

Disability decisions are made by an evaluation team consisting of a physician and a counselor skilled in vocational evaluation. The team works in an agency of the state in which the applicant lives—in Delaware, at the Disability Determinations Unit of Vocational Rehabilitation.

Typically, the evaluating physician is a private practitioner serving the agency on a part-time basis. He reviews the medical, hospital and laboratory reports and, in conjunction with the vocational evaluator, decides whether the applicant's impairment is disabling under the law.

Does the State agency physician also examine the applicant?

No. He depends entirely on the evidence reported by you and others who have examined or treated the applicant.

Can a person appeal the denial of his claim?

Yes. He is entitled to have his claim reconsidered, submitting any new evidence that may be available. If his claim is again disallowed, he can have it ruled on by a hearing examiner located near his home. As a further appeal, the claimant can request that the decision in his case be reviewed in Washington, D.C., by the Appeals Council of the Bureau of Hearings and Appeals. Then if he is still dissatisfied, he can file suit in his local U.S. District Court to have the decision reviewed.

Reporting Medical Evidence

What kind of medical report on my patient should I submit?

Submit a standard narrative report, such as you would send any colleague to give a complete medical picture of the patient. This should include the history, and physical and laboratory findings—as much objective data from the patient's chart as possible.

Who pays for my report?

Your patient is legally responsible for providing initial medical evidence in support of his claim. Therefore, he is responsible for any fee you would charge for preparing your report.

Is the initial report from the treating physician all the medical information that the State agency needs to decide a case?

In many cases, yes. Frequently, reports from other treatment sources such as hospitals and clinics are also used. If the evaluating physician requires certain data that was not reported, he may call or write you to find out if you have the needed information in your records.

Suppose I don't have it?

Then the evaluating physician may ask if you wish to provide the information by performing tests or an examination for a fee paid by the Government. Or he may obtain the information by sending the applicant to an independent medical source for examination.

Who are these independent sources?

Generally, other physicians in private practice. Any qualified physician may ask the State agency to place his name on its consultant roster to perform examinations with the Disability Determination Services Suite 32, Professional Building, Augustine Cut-oOff, Wilmington, Delaware 19803.

How are the consultants' fees set?

The fees are based on a schedule which the agency has worked out with the Medical Society.

Motivating Rehabilitation

What is done for applicants who need rehabilitation help?

Every Delaware patient applying for benefits is considered for possible services by the Vocational Rehabilitation Division of Delaware, 1500 Shallcross Avenue, Wilmington, Delaware 19899. Such services include counseling, teaching of new employment skills, training in the use of prostheses, and job placement. These services are generally financed from State-Federal appropriations. Additional resources are now provided through social security funds to pay the costs of rehabilitating certain disability beneficiaries.

Do benefits stop when a beneficiary who has not recovered goes back to work?

Generally, not right away. A person who tries to work *despite his medical disability* is usually given a "trial work period" of 12 months of continued benefits.

This helps reassure a person who might hesitate to go back to work for fear of losing his benefits before he knows whether he can hold down a steady job. Benefits are stopped at the end of the trial work period only if the beneficiary has shown that he has regained his ability to do substantial gainful work.

What happens when a beneficiary recovers medically?

His monthly benefit checks are continued for the month of recovery and 2 additional months. This is to help him adjust financially to being self-sufficient. Then, since he is no longer disabled, his benefits stop.

To be sure that beneficiaries continue to qualify for benefits, there are periodic reviews of all cases in which recovery is thought possible.

Does a person who has recovered or returned to work get special consideration if he becomes disabled again?

Yes. If he again becomes disabled within 5 years, the 6-month waiting period normally required before benefits begin is waived. He can immediately become re-entitled to benefits, as long as he is still insured for disability purposes.

Social Security Disability Provisions at a Glance

- Benefits go to disabled workers under 65 and their dependents.
- A worker is considered disabled if a physical or mental impairment prevents him from doing any substantial gainful work in keeping with his age, education, and work experience.
- Benefits are payable if the disability has lasted or is expected to last 12 months or longer or to result in death.
- To acquire disability protection, a person needs to have worked under social security a certain length of time.
- There are special liberalized eligibility requirements for persons who become disabled by blindness before age 31 and for blind persons aged 55 and over.
- Benefits begin with the 7th full month of disability.
- Benefits are the same amount that retirement benefits would be if the worker were 65.
- Benefits last as long as the disability continues or until retirement benefits start.
- An adult disabled since before age 18 may be eligible for "childhood disability" benefits if his parent covered under social security dies or becomes entitled to retirement or disability benefits.
- All applicants are considered for vocational rehabilitation services.

Easter Seal Meeting

The annual convention of the National Society for Crippled Children and Adults will be held November 16-19 at the Century Plaza Hotel, Los Angeles, California.

President's Page

Notes on the Activities of the AMA. House of Delegates Meeting

June 18 - 22, 1967.

At Sunday's opening session, the House heard outgoing President Charles L. Hudson, M.D., Cleveland, Ohio, urge physicians of the United States to "take the initiative and apply local solutions to local problems" in order to "persuade people that the proper function of government is to confine its activities to the support of private enterprise rather than to act as a competitor." Dr. Hudson stressed that it remains a continuing charge of physicians "to seek out and meet any discovered needs for health care" and observed that "One of the greatest challenges facing the medical profession now and in the immediate future . . . is the organization of community health care."

One subject that has generated interest not only in the profession but among legislatures and the public is therapeutic abortion.

The following was established as policy of the American Medical Association:

". . . Recognizing that there are many physicians who, on moral or religious grounds, oppose therapeutic abortion under any circumstances, the American Medical Association is opposed to induced abortion except when:

(1) There is documented medical evidence that continuance of the pregnancy may threaten the health or life of the mother, or

(2) There is documented medical evidence that the infant may be born with incapacitating physical deformity or mental deficiency, or

(3) There is documented medical evidence that continuance of a pregnancy, resulting from legally established statutory or forcible rape or incest may constitute a threat to mental or physical health of the patient;

(4) Two other physicians chosen because of their recognized professional competence have concurred in writing; and

(5) The procedure is performed in a hospital accredited by the Joint Commission on Accreditation of Hospitals."

"It is to be considered consistent with the principles of ethics of the American Medical Association for physicians to provide medical information to State Legislatures in their consideration of revision and/or the development of new legislation regarding therapeutic abortion."

Regarding the Title XIX program, the House made it policy that "the medical profession should now take a firm stand in support of the Title XIX approach in improving the health and the delivery of health care services to the needy of the nation."

Recommendations adopted by the House are that the medical profession take a strong stand in support of implementation of Title XIX "while still seeking such changes in the federal legislation and/or regulations as will improve this program; that it urge organized medicine to take a leading role in formulating and directing Title XIX programs at the state and local level . . . and that it incorporate in such planning the use of existing voluntary mechanisms and private insurance carriers, wherever feasible, utilizing the usual and customary fee principle, thus bringing within the mainstream of present medical care systems the provision of quality health care for all Americans."

The House adopted the following recommendations of the Board regarding the medical profession's relationships with osteopathy:

1. Authorize the Board of Trustees to begin promptly, negotiations directed toward beginning official change of schools of osteopathy to schools of medicine. (It is understood that from the AMA, funds will be required to conduct these negotiations, and assistance in identifying and securing additional funds from other sources to support efforts toward changing the schools.)

2. Authorize the Council on Medical Education to undertake negotiations to establish means by which selected students with proven satisfactory scholastic ability in schools of osteopathy may be considered by schools of medicine for transfer into medical school classes.

The primary issue in the relationship of medicine and osteopathy, as recognized by the House, seems to be not that of cultism as opposed to science. Rather the issue appears to be one level of medical education and practice as opposed to another and lower level of education and practice. The extensive and growing licensure of osteopathic physicians for the unrestricted practice of medicine and the nature of osteopathic education strongly indicate that time alone will resolve shortly, the problem of cultism in relation to osteopathy.

The House adopted the report of the Reference Committee on Members' Disability Insurance Program.

The committee's report, as adopted, recommended that the House authorize the Board to make every effort to continue the AMA Members Group Disability Insurance Program with the same premium-benefit structure. It also recommended the following guidelines to aid the Board in negotiating and executing the necessary contracts and in the future operation of the program:

1. The contract should provide ample assurance that disability claimants will be treated equitably and justly.

2. The carrier should guarantee benefits and premiums for a period of at least five years in order to assure the stability of the program.

3. Promotional literature should be approved in advance by the Board or its designee. All measures within the bounds of dignity and ethics should be utilized to promote the program.

4. A continuous ongoing review of the entire program should be maintained. The insured and other members should be made aware that such a review may reveal in the future the necessity for a revision of the program at the end of the five-year period.

5. Information regarding the operation of the program, its financial aspects and processing of claims should be available to the Board for review at any time.

6. An AMA Disability Insurance Review Committee should be continued and should provide a mechanism for claims review.

H. Thomas Mc Guire

Medical Aspects Of Sports

The Ninth National Conference on the Medical Aspects of Sports, sponsored by the AMA will be held in Houston, Texas, at the Hotel America, on November 26, 1967—the first day of Clinical Convention of the AMA. The conference is open to key non-medical personnel as well as interested physicians.

Delaware Academy of General Practice

UTILIZATION

Utilization is a word we have all come to know and try to understand. The medical profession, feeling the lack of beds, is attempting to develop better techniques for utilizing facilities of community hospitals both now and in the future. Originally, there was a certain sting in the word "utilization." Many of us reacted against the actions of utilization committees. However, the improvements brought about by the utilization procedures have made most of us acquiesce to the new list of rules, and in most hospitals they are strongly supported by the professional staff.

The congested bed problem is so widespread that federal and state agencies have begun pilot studies to pin down the areas where utilization can be improved. Many physicians have given much time and energy to support the program.

On the local scene, the community and the hospital are involved in creating new programs through planning committees. The enormous predicted increase in population in the state of Delaware has made it necessary to plan not only on a single hospital level but also on a community and state-wide level. We are trying to define the needs of the hospital, the general physician, and the specialist at the community and state level. Also included in these surveys is the need for paramedical personnel. There is little doubt that extensive planning for the present and the future will be helpful to hospitals and hospital directors as well as state and federal agencies.

The common goal is to supply better health facilities for the citizens of the state and to create an environment wherein doctors work more efficiently.

On the other hand, if one looks into the utilization problems in hospitals, it is obvious that there are certain influences such as those of insurance health programs that will benefit greatly from better utilization. At the same time, the present policies of many insurance companies make proper utilization of hospital beds very difficult. It is time for the health agencies, welfare plans and insurance companies to wake up to the problems that they are creating. Only Blue Cross has coverage for outpatient work and this in many instances, is a token amount. Many large health and accident insurance companies pay nothing or very little toward outpatient coverage in the hospital, but boast of their fine inpatient coverage. Obviously, such policies force many patients to be hospitalized who could be handled as outpatients.

The time has come to emphasize to federal, state and insurance agencies that properly supported outpatient facilities such as emergency rooms, doctors' offices, home visits, etc., will lead to a better utilization of hospital beds and, in the long run, be far cheaper than the present system. More out-of-the-hospital bed care would allow hospitals to give the public the new facilities to which they are entitled. Inpatient facilities should be organized for intensive care and progressive care, separate extended care facilities should be created—perhaps in different hospitals. Much of the present population of our community hospitals would be far better handled in outpatient diagnostic treatment centers than in community health centers.

The unions might be more helpful on two accounts. They should emphasize or demand outpatient care and diagnostic facilities instead of proudly acclaiming that all of their members may be hospitalized at the expense of the union. Secondly, they should give their better support directly to the institutions involved. Payment could be made directly to institutions or physicians rather than the present policy whereby some insurance agencies make payment to the patient and let the institution struggle with the patient to get bills paid.

Utilization will be our watchword for some time. We physicians must insist that insurance companies, federal agencies, unions, etc., change their policies to support better hospital utilization and drop their slogan, "*Put them in the hospital, we pay the cost.*"

The Physician and The Pharmacist

A monthly feature of the Delaware Pharmaceutical Society

DRUG INFORMATION ABSTRACTS*

Disinfectants

Pseudomonas Contamination

During the investigation of an outbreak of infection caused by Proteus mirabilis in a hospital nursery it was discovered that disinfectant solutions in use throughout the hospital were contaminated with viable gram-negative bacilli. Subsequent investigation showed that solutions of Hibitane (chlorhexidine) and Savlon (cetrimide-chlorhexidine mixture) issued from the pharmacy were frequently contaminated with Pseudomonas species. The contamination was maintained by a residual inoculum remaining in bottles after washing, and was spread to other bottles in the bottle washing apparatus. It is not generally recognized how widespread contamination of solutions used in hospitals can become. The authors examined stock solutions of aqueous chlorhexidine and Savlon in four additional hospitals and found 30 of 48 samples contaminated with Pseudomonas ap. *In one pharmacy the distilled water used for dilution was found to be heavily contaminated with the same organism.*

It is somewhat disconcerting to note that chlorhexidine has been recommended as the disinfectant of choice against Pseudomonas. How organisms of the Pseudomonas species come to be so resistant to disinfectants is not clearly understood. This and other organisms have been isolated from various unlikely sources, including pharmaceutical products. In 1964, in Sweden, eight cases of the eye occurred at two different hospitals after removal of foreign bodies. The infections, caused by Pseudomonas aeruginosa, developed despite the use of an ointment containing hydrocortisone, amphomycin, and neomycin. In the investigation which followed Pseudomonas aeruginosa was isolated in moderate to heavy growth from tubes of ointment used in treating the patients and from unopened tubes of the same batch. In addition, Staphylococcus pyogenes and E. coli were isolated from a variety of ointments, creams, powders and tablets. Salmonella muenchen and S.bareilly were isolated from tablets containing thyroid extract. S. muenchen from this source alone caused 237 cases of salmonellosis in Sweden in 1966. Czechoslovakia seems to be the only country in Europe in which there are statutory microbiological standards for tablets. Hospital bacteriologists might turn their attention to products of the pharmacy to find out if contamination is occurring. As the British Medical Journal suggests in a Leading Article, "the results could be disconcerting."

Burdon and Whitby (Birmingham, Eng.)
British, M. J. 2:153 (Apr. 15) 1967.
Clin-alert No. 119, June 9, 1967.

Methadone and Morphine

A clinical comparison of the analgesic effects of methadone and morphine administered intramuscularly, and of orally and parenterally administered methadone.

W. T. Beaver, M. D., S. L. Wallenstein, M. S., R. W. H. Honde, M.D. and A. Rogers, R. N. New York, N. Y.
Clinical Pharmacology and Therapeutics 415-426 (May-June) 1967.

The relative analgesic potency of single graded intramuscular dose of methadone and morphine was evaluated in a double-blind crossover study in patients with chronic pain due to cancer. If one considered either "total" or "peak" effects, the analgesic potency of methadone was estimated to be equal to or slightly greater than that of morphine.

The time-effect curves of the two drugs were similar, and there was no evidence that methadone was longer acting than morphine. Oral and intramuscular methadone were compared in a similar patient group. In terms of "total" effect, methadone was found to be approximately one half as potent orally as it was parenterally, a relatively high ratio for oral activity as compared with other narcotics. In roughly equianalgesic doses, the occurrence of side effects was qualitatively and quantitatively similar for parenteral morphine and methadone and for oral and parenteral methadone.

---

*This is a monthly series of drug information abstracts gathered from current articles and prepared by the pharmacists with the purpose of alerting you on drugs and/or their complications.

TWO VENTILATING ATTACHMENTS FOR BRONCHOSCOPES

Continued from Page 175

entirely new adapter-bronchoscope combination with vapor entrainment, designed in collaboration with Dr. Frank T. O'Brien, bears promise and passed its first clinical trials.

Conclusions

1. A device for ventilating the lungs, while attached to bronchoscopes, is described. This uses the energy of 50 lbs., or less, oxygen pressure exerted through an injection nozzle of small size.
2. Data is given on the development, physical functioning, and clinical use of this attachment.
3. A further development of this principle for performing both ventilation and the administration of anesthetic vapors is described.
4. Both attachments have proven to be useful in bronchoscopy.

BIBLIOGRAPHY

Behnke, A. R.: Certain Physiological Principles Underlying Resuscitation and Oxygen Therapy. Anesthesiology 2:245-260, 1941.

Roth, L. W.; Whitehead, R. W. and Draper, W. B.: Studies on Diffusion Respiration II: Survival of the Dog Following a Prolonged Period of Respiratory Arrest. Anesthesiology 8:294-302, 1947.

Draper, W. B.; Whitehead, R. W. and Spençer, J. N.: Studies on Diffusion Respiration III: Alveolar Gases and Venous Blood pH of Dogs During Diffusion Respiration. Anesthesiology 8:524-533, 1947.

Whitehead, R. W.; Spencer, J. N.; Parry, W. B. and Draper, W. B.: Studies on Diffusion Respiration IV: The Oxygen and Carbon Dioxide Content and the Hydrogen Ion Concentration of Arterial and Venous Abdominal Blood of Dogs During Diffusion Respiration. Anesthesiology 10:54-60, 1949.

Fink, B. R.: Diffusion Anoxia. Anesthesiology 16:511-519, 1955.

Mathewson, H. S.: McIntyre, J. D. and Meriwether, D. R.: Ventilation During Anesthesia for Bronchoscopy. Anesthesiology 17:623-624, 1956.

Bayuk, A. J.: Chest Respirator for Bronchoscopy and Laryngoscopy. Anesthesiology 18:135, 1957.

Kovacs, S.: Method of Ventilation During Bronchoscopy. Anesthesiology 18:335, 1957.

DeKornfeld, T. J. and Siebecker, K. L.: Changes in Oxygen Saturation During Bronchoscopies. Anesthesiology 18:466-9, 1957.

Safar, P.: Ventilating Bronchoscope. Anesthesiology 19:406, 1958.

Eger, E. I. and Severinghaus, J. W.: The Rate of Rise of PA_{CO_2} in the Apnic Anesthetized Patient. Anesthesiology 22:419-25, 1961.

Gordon, G. F.; Craig, R. G. and Searcy, R. L. "Correspondence" Effects of Apnea on Blood Acid-Base Parameters. Anesthesiology 24:118, 1964.

Fujimori, M. and Virtue, R. W.: Value of Oxygenation Prior to Induced Apnea. Anesthesiology 21:46, 1960.

Symposium on Carbon Dioxide and Man. Anesthesiology 21:585-766, 1960.

Downes, J. J.; Wilson, J. F. and Goodson, D.: Apnea, Suction, and Hyperventilation: Effect on Arterial Oxygen Saturation. Anesthesiology 22:29-33, 1961.

Helperin, S. W. and Waskow, W. H.: Emerson Wrap-around Chest Respirator for Use in Bronchoscopy and Laryngoscopy. Anesthesiology Analg. (Cleveland) 83:444-50, 1959.

Muendnich, K. and Hoflehner, G.: The Anesthetic Ventilation Bronchoscopy. Der Anesthesist 21:121, 1952-53.

Konig, G.: A New Ventilation Bronchoscope. Tuberkulosearzt 10:303, 1956.

Churchill-Davidson, H. D.: Letter-to-Editor, Anaesthesia Vol. 8 No. 2, 128 April, 1953. Anaesthesia for Bronchoscopy Vol 7 No. 2, 128 April, 1953. Anaesthesia for Bronchoscopy Vol. 7

MENINGITIS DUE TO LISTERIA MONOCYTOGENES

Continued from Page 183

kanamycin and the synthetic penicillins are effective.[5]

The present patient made an uneventful recovery, and a good number of her laboratory studies were actually performed while she was on her way to recovery. The source of infection was thought to be an infected rabbit from her uncle's farm, and this possibility was referred to the State Health Department.

This case presents an unusual bacterial meningitis with relatively few cases having been reported in the world literature and no large series reported in the American literature. Hoeprich points out that the disease is similar in all respects to other bacterial meningitides without the high sequelae rate of pneumococcal infections but with a similar mortality.[2] The satisfying results obtained in this patient were undoubtedly due to the prompt therapy of the bacterial meningitis, although the organism was not properly identified until several days after her treatment was instituted.

REFERENCES

1. D. McKinnon and J. M. Swithinbank, "Meningitis due to Listeria Monocytogenes." *Lancet* :516, 1961.
2. P. D. Hoeprich, "Listeria infections." *Principles of Internal Medicine*, McGraw-Hill, New York, pp. 978.
3. C. D. Graber, L. S. Higgins, J. S. Davis, "Seldom encountered agents of bacterical meningitis." *JAMA*, 192:114, 1965.
4. K. M. Cahill and I. Ring, "Listeria monocytogenes meningitis." *Archives of Internal Medicine*, 110:161, 1962.
5. M. N. Swartz and P. R. Dodge, "Medical progress — bacterial meningitis, A review of selected aspects." *New England Journal of Medicine*, 272: pp. 725, 842, 898, 1003, 1965.

In Brief

Speakers On "Ask The Doctor"

Speakers for August, 1967, on the Tuesday Radio Program, (11:05 a.m., WDEL) produced by the Medical Society of Delaware are: August 1, Morris Liebesman, M.D., *Insect Bites;* August 8, Charles F. Richards, M.D., *Thyroidectomy;* August 15, Charles L. Minor, M.D., *Hernias in Infants and Children;* August 22, William F. Rath, M.D., *Eye Injuries;* August 28, Richard F. Brams, M.D., *Hayfever.*

New Psychiatric Slate

The Delaware Psychiatric Society Meeting elected the following officers for the following year: President, H. George DeCherney, M.D.; Vice President, Nicholas P. Bash, M.D.; Secretary-Treasurer, Lidia Bales, M.D.; Council, Thomas H. Hogshead, M.D.; Council, Richard Winkelmayer, M.D.; Program Chairman, Shao-Chi Yu, M.D.; Delegate to Assembly of District Branches of APA, Lidia Bales, M.D.

Medicare's First Year

The first year of Medicare was a trying period for the 33 Blue Shield Plans serving as carriers for 60%—(approximately 10,000,000) of the Part B recipients. The plan started slowly in July and started to snowball by September when most carriers found themselves inundated. The report was that half of the claim fell into the "hard-to-process" category, primarily because these were improperly filled out. The large inventory of unpaid bills began to pile up and emergency procedures were quickly instituted to halt the flood of claims. The Delaware Plan, with Blue Shield as carrier, ended the year with the volume of work in the Medicare-Medicaid Division beginning to approach that involved in the operation of the rest of the plan. Harold V. Maybee, managing director, had this to say, "Delaware Plan receives approximately 1600 bills a week from Medicare and has a 12.5 day processing time. Through May 31, the plan had paid out over one million. It is rapidly being merged into an efficient operational unit. *Blue Cross-Blue Shield of Delaware*

National Blood Resource Program

The Public Health Service has awarded $1,715,055 for developmental work in blood fractionation, for research to assess the effectiveness of adenine as a blood preservative, and to establish the safety of adenine-treated blood for clinical use. This sum in the form of 12 research contracts was the first to be awarded by the National Blood Resource Program established last year at the direction of Congress. Specific blood fractions are being used increasingly in lieu of whole blood or plasma transfusions in many replacement situations because, properly used, they yield superior clinical results and reduce the risk of transfusion reaction. Important cellular fractions of whole blood are red blood cells—used to restore the normal oxygen-carrying capacity of the blood in certain anemias and blood platelets, for the prevention or control of hemorrhage in leukemia. Important plasma protein fractions include 1) gamma globulins, for protection against infectious diseases; 2) concentrates of various clotting factors, such as antihemophilic factor, for the prevention or control of hemorrhage in hemophilia and related bleeding disorders; and 3) albumin, for augmenting plasma volume in the treatment of hemorrhage, severe burns, shock, and other conditions. Other contracts will support studies to determine the effects of adenine on blood constituents, to study its distribution and metabolic fate in the body, and to establish the safety of adenine-treated blood and blood products for medical use. It is hoped that these studies will confirm evidence that adding this chemical preservative to whole blood can double its shelf life: the period that it remains safe for transfusion when stored at 4°C; present shelf life is only 21 days.

"Primary" Trainees' Program At Temple

The first fellowship training program in primary care established at Temple University Medical Center is now in its developing stages. The program is expected to include six fellows this July and a much greater number the following year. It is open this year to physicians just completing internships, and to practicing physicians who are interested in pursuing the field. Eventually, the first year will be included in the National Intern Matching Program. For those just out of medical school, the program will combine intern and residency training in a full three-year course. For physicians who have had graduate training or are in practice, the keynote of the program will be flexibility, with time and curricula geared to the individual physician's needs.

The Month In Washington

Health Care

The medical profession and others in the health field were called on to "search for new and less expensive ways of doing things" by John W. Gardner, Secretary of HEW, in his talk at the two-day National Conference on Medical Costs. "We cannot go on as we have in the past," Gardner said. "New patterns will be necessary. Those who entertain some apprehension as to what the new patterns will be, had better plunge in and experiment with their own preferred solutions . . . Standing back and condemning the solutions that others devise won't stem the tide of change. . . ."

Draft Legislation

President Johnson signed into law legislation extending the draft for four years. It includes a provision continuing special pay for physicians and dentists.

The new law also continues the authority to defer medical students until completion of internship. In the future, foreign physicians in this country will be liable to draft up to age 35—the same as for Americans. Under the old law, foreign physicians were exempt from age 26.

The present blanket military exemption for Public Health Service officers serving on loan to other agencies such as FDA was removed despite protests by the agencies involved. Such assignments with draft exemption can now be made only to the Coast Guard, Bureau of Prisons and Environmental Services Administration. The AMA asked Congress to allow no draft exemption for non-military service.

Rehabilitation Medicine

The 45th Annual Session of the American Congress of Rehabilitation Medicine will be held at the Americana Hotel, Bal Harbor, Miami Beach, Florida, August 27-September 1, 1967.

CLINICAL NOTICES AND MEETINGS

Boston Postgraduate Course

A "Three Days of Cardiology" postgraduate course on Congenital Heart Disease Problems will be held September 18-20 in the Jimmy Fund Auditorium of The Children's Hospital, Boston. This is co-sponsored by the American Heart Association's Council on Clinical Cardiology and the Children's Hospital in cooperation with the Massachusetts Heart Association and the Council on Rheumatic Fever and Congenital Heart Disease. Registration fees are $60 for Members and Fellows of the two AHA Councils and $95 for non-members, including luncheons. For registration forms, write: Director of Medical Education, American Heart Association, 44 East 23rd Street, New York, N.Y., 10010.

American Academy Of Pediatrics

The AAP will hold its 36th annual meeting in Washington, October 21-26, 1967, at the Washington Hilton Hotel. Scientific programs will be presented on the Academy Sections of Allergy, Anesthesiology, Cardiology, Child Development, Diseases of the Chest, and Surgery, and the Committee on Urology. Write: AAP, 1801 Hinman Avenue, Evanston, Ill., 60204, for a preliminary program and registration forms.

Acute Leukemia

A symposium on Acute Leukemia and Burkitt's Tumor, sponsored by the American Cancer Society and the National Cancer Institute, Sept. 20, 1967, Boston Museum of Science, Boston, Mass. The meeting is open to all members of the medical profession and students with no advance registration or fee required. For further information, write: Jack W. Milder, M.D., Research Department, American Cancer Society, 219 East 42nd Street, New York, N.Y. 10017.

Symposium On Sports Medicine

A symposium on Sports Medicine will be held at Germantown Academy, Fort Washington, Pa., August 10-11. Program is open to all physicians, surgeons, and coaches and trainers of college, private and public and parochial schools. The course is acceptable for 9½ hours of Category I credit by the American Academy of General Practice. All questions about the Symposium should be directed to David G. Moyer, M.D., at Germantown Academy.

Hahnemann Courses

Postgraduate courses sponsored by the Hahnemann Medical College and Hospital, Philadelphia, are as follows:

General Internal Medicine, Oct. 4, 1967, through Mar. 27, 1968, every Wednesday—1-4 p.m., at the College.

A Current View of Congestive Heart Failure, Nov. 13-14, 1967, Sheraton Hotel.

Human Sexual Function and Dysfunction, Nov. 17-18, 1967, Marriott Motor Hotel.

Subsequent postgraduate schedules will be published later.

Blood Banks Meeting

The American Association of Blood Banks will hold its 20th Anniversary Meeting October 21-25, 1967, at the Americana Hotel, New York City.

Auxiliary Affairs

AUXILIARY ESTABLISHES VIETNAMESE AID PROJECT*

The Woman's Auxiliary to the American Medical Association has "adopted" two young Vietnamese mothers who arrived in the U.S. this month for short term, specialized medical training. They are Mrs. Tran thi Minh Hien and Mrs. Nguygen thi thu Nguyet, who are receiving their instruction through "on-the-job" training programs at Georgetown University School of Medicine, Washington, D.C. The Auxiliary will pay a part of their living expenses during their 3-month stay in the U.S. The Woman's Auxiliary to the District of Columbia Medical Society is acting as unofficial host.

Mrs. Hien, a pharmacist, is receiving training as a laboratory technician in physiology and pharmacology, Mrs. Ngyuet, a nurse and administrative assistant, is being trained in visual aid techniques for use in teaching. Both mothers of 3-year-old daughters, they were selected for this training by Prof. Tran Cy, Chairman, Department of Physiology, Faculty of Medicine, University of Saigon, and Laurence Lilienfield, M.D., Chairman, Department of Physiology, Georgetown University School of Medicine.

The AMA is conducting a medical education project in Vietnam under a contract with the Department of State's Agency for International Development. Georgetown University, one of the first medical schools in the nation to take part in the project, has signed a sub-contract to train medical technicians to serve as teachers in Vietnam. Mesdames Hien and Nguyet were the first to be brought to the U.S. under the Georgetown program.

The USAID pays a small stipend to cover their minimum living expenses. The two women are almost solely dependent on the stipend due to restrictions on the amount of Vietnamese currency they could bring with them.

The Auxiliary learned of this and decided to do what it could to make the students' stay as pleasant and beneficial as possible.

"The Auxiliary decided to supplement their living expenses," explained Mrs. Burton E. Kinter, Elkhart, Ind., a member of the Auxiliary's Board of Directors and chairman of its Philanthropy Committee. "It will give each of them $25 a week, funds permitting." "I feel they've made a sacrifice in order to help their own people. They've both left their homes and families," Mrs. Kintner said. Mrs. Kintner added that donations from state and county auxiliaries will be welcomed. These may be sent to Auxiliary Headquarters at the AMA in Chicago and should be marked for the Vietnamese Student Aid Project with checks payable to the Auxiliary.

---

*AMA News Release, April 20, 1967

HAVE YOU TRIED THESE?

Here are some of the favorite recipes of Delaware physicians compiled in a cookbook* recently published by the Woman's Auxiliary to the New Castle County Medical Society.

SPINACH SALAD WITH BEER DRESSING

Clean fresh, raw spinach and peel leaves off large stems.

Dressing:

Dice white Spanish onion into bowl. Add two heaping tablespoons mayonnaise, ½ teaspoon fresh ground pepper, salt to taste, dash of Tabasco, 2 teaspoons Worcestershire sauce. Add flat beer to desired dilution. Pour over spinach and toss.

Robert D. Hunt, M.D.

---

*Proceeds from this book are used for the benefit of the Scholarship Fund for Delaware nurses. These books can be puchased by writing to: Mrs. Leslie W. Whitney, 1703 Talley Road, Forest Hills Park, Wilmington, Delaware, 19803, and mailing a check for $2.50.

Delaware
Medical Journal

AUGUST, 1967
VOLUME 39
NUMBER 8

Editorial...

THE ROLE OF THE STATE MEDICAL JOURNAL

Medical and commercial progress, boosted by the endless energy of advertising, has gradually glutted the medical literature into an unreadable mountain of paper. Some of it is commendable; some of it should never have been published. It is evident that State Journals find it difficult to compete with National Journals on the basis of scientific content. The reasons for this are all too obvious. What then justifies the existence of the State Journals?

If the State Journals cannot compete with the National Journals for scientific excellence, they must perform another major service. Their uniqueness centers on the fact that they can be small and oriented to local problems and news features. The latter is probably the most important. Scientific articles such as a case report of Rocky Mountain Spotted Fever may have great merit locally but little impact nationally. What is important to a State Journal is that a physician can review his experience with a series of cases in his particular field and present it to his colleagues locally, whereas on the national scene, this may appear repetitious. But without this communication link with State Society colleagues, how can a physician know what *they* are accomplishing and so evaluate *their* successes.

The reporting of local scientific accomplishments and cases of epidemiological overtones is of value, but, of equal significance is the announcement or description of new facilities and services. There are three coronary care units in Wilmington and a more advanced unit has recently been established in Milford. What are they doing? How do they differ? Are they worthwhile? What type of patient do they treat and what are the local protocols? These are clinical services of state-wide importance and yet little is known about them except for the individual physician's own spotty experience.

Many changes recently took place in the clinical services of the Wilmington Medical Center. A description appeared in the lay press but no report of a scientific nature was submitted to the Delaware Medical Journal.

The State Journals are for local authors, state or county medical news, for the impact of national items with local interpretations. Individual opinion is sought in the form of *Letters to the Editor* and yet these are rarely received.

As the number of physicians have increased in Delaware, the number of articles submitted to the State Journal for publication each month have decreased. Is this a new breed of physician—so busy that he does not have time to write—or is he simply less observant than his predecessors.

HEALTH SCIENCES LIBRARY
UNIVERSITY OF MARYLAND
BALTIMORE

TRAUMA AND THE LUMBAR DISC LESION

Post-Traumatic Sequelae

• A fifteen year experience with low back pain following a history of trauma in 888 patients. Mr. J. R. Armstrong, the English orthopedic surgeon, presented a concept in 1952 which has been expanded and utilized. With experience, this concept and medical approach has been found to be beneficial and is now presented for further evaluation and utilization.

JOSEPH A. ARMINIO, M.D.

Trauma has been implicated as a major causative agent in the development of the lumbar disc lesion. This concept is most prevalent in the lay press and in the courtroom. The basic etiology of lumbar disc lesions is still unknown, but we have not broken away from the older, and almost certainly erroneous, concept of a single episode of trauma as being the dominant cause of these lesions.

Since the historic paper of Mixter and Barr in 1934,[1] many investigations have been added to our diagnostic repertoire; but it is doubtful if they represent a pronounced advance in history taking and clinical examination. With the socioeconomic changes that have occurred, it has become more important to use wisely our limited knowledge and not add iatrogenic results to the basically poor understanding of the problem and presenting complaints. When an individual presents himself with a history of trauma, he should be evaluated as a whole. During the history taking, his background, social status, work relationship, goals and aims should be evaluated. This is followed by an examination, the use of diagnostic aids and, lastly, treatment. Re-evaluation should be continued as he is seen. Treatment should be altered as time elapses and should be commensurate with the course of his complaints and the results of the treatment. No treatment should be instituted that cannot be altered, otherwise iatrogenic effects will be initiated that will be almost impossible to revoke.

The anatomy of the intervertebral disc demonstrates that it is a single, functional entity. Its component parts, for the sake of description, are considered separately but anatomically and physiologically they are interdependent.

The parts[2] are:

1. The cartilage plates enclosing it above and below.
2. The annulus fibrosis at its perimeter.
3. The nucleus pulposus in the central portion.

The cartilage plates cover the central portion of the intervertebral body and they function to nourish the nucleus pulposus which has no blood vessels leading to it. This plate also functions as an anchorage for the fibers to the annulus and nucleus. The annulus fibrosis consists of a series of concentric laminae with oblique fibers that extend from the cartilage end plates. This annulus is very firmly attached to the anterior and lateral margin of the vertebral bodies and to the

---

Dr. Arminio is a Senior Surgeon, Wilmington Medical Center; Attending Chief in Surgery, St. Francis Hospital and Director, Industrial Care Center, Wilmington, Delaware.

strong antero-longitudinal ligament. Posteriorly, however, the attachment is not as firm. This explains the protrusion of the nucleus pulposus when the annulus fails. In an adult male, the pulposus has a semi-gelatinous consistency that is white and slightly transparent. It is made of a loose network of fine strands of fibrous tissue which are also attached to the cartilage end plates. Within the strands there are connective tissue cells and cartilage cells.

The chemical composition of the connective tissue fibers is collagen, and between these fibrous interstices are chondromucoid elements which form a gel. The elements consist of a polysaccharide protein complex containing chondroitin sulfates A and C and kerato-sulfate.[3] The composition of the nucleus and its water content vary with age. The total protein is said to remain constant with a gradual increase in muco-protein element up to the age of 40 after which it decreases with a corresponding increase in collagen. With age, the collagen content rises and elasticity decreases.

A nerve supply to the lumbar disc has been shown to exist. Von Luschka[4] has shown that recurrent branches of the spinal nerves distribute themselves to the posterior aspect of the intervertebral discs. Roofe[5] has shown that unmyelinated nerve fibers do exist in the posterior part of the annulus fibrosus. Pedersen, Blunck, and Gardner's[6] works suggest that the posterior rami also supply sensory fibers to the fascia, ligaments, periosteum, and posterior intervertebral joints in addition to the cutaneous distribution.

The structures surrounding the disc areas and joints in and about the vertebral sections are important. Each intervertebral joint consists of two parts: an anterior, amphiarthroidal joint between the vertebral bodies; two posterior, arthroidal joints between the articular processes. These joints are important to remember when a disc collapses and nuclear destruction results. The normal compression forces are transmitted through the nucleus and distributed evenly over the annulus and cartilage end plates.[7] With nuclear destruction, this pressure is no longer evenly distributed.[8,9] With narrowing of the space between the vertebral bodies, there is an associated, partial disarticulation of the posterior joints; thus there is mismatching of the joints with pseudoarthritis resulting, as well as pain. It is of interest to note the relationship of the roots of the spinal nerves to their extrathecal course and the posterior surface of the intervertebral disc and postero-longitudinal ligament.[10] The posterior root transverses one disc area in its extrathecal course before emerging through the intervertebral foramen. The anterior relation of each nerve, as it enters the foramen, is a vertebral body. Only as the nerve leaves the foramen does it come in contact with the postero-lateral surface of the next lower intervertebral disc space.

Four Main Functions

The nucleus pulposus has four main functions. It serves as a fulcrum for movement. It equalizes stresses. It acts as a shock absorbing mechanism. It functions as a fluid exchange mechanism in the intervertebral disc. The annulus fibrosis is present for stability and acts in movements between the vertebrae. It acts as a shock absorber to absorb some of the expended energy transmitted to it from the nucleus. The cartilagenous end plates function as a protection for the vertebral bodies and as a fluid exchange area between the disc and the vertebral bodies. An ingenious experiment by Charnley[11] has shown that the mechanism of fluid exchange in the nucleus pulposus is by imbibition and the nucleus pulposus has the faculty of imbibing and holding fluid against mechanical pressure. This phenomenon acts as a gel mechanism as suggested by Hendry.[12] By having the properties of a gel, the pressure, which is called the imbibition pressure, is a necessary mechanism for complete action of the nucleus. Thus the nucleus, by virtue of its gel properties, absorbs fluid against the compression forces acting on it through the vertebral bodies. When this mechanism is distributed by loss of fluid or by chemical changes within the gel consistency, the chemistry of the nucleus is altered and its imbibition activity is

TABLE I

ANATOMICAL CLASSIFICATION

Stage I Disintegration of a Disc:

The nucleus shows increased collagen content. Chemically the gel consistency is altered with resultant less imbibition effect.
The annulus wall shows cracking, distention, and less elasticity. There is less fluid shift through cartilage plates.

Stage II Protrusion of a Disc:

The annulus cracks and rents appear with nucleus displacement out of its confines into the posterior portion of the spinal canal onto the nerve root.

Stage III Fibrosis or Healing of a Disc:

Fibrous tissue replacement of the disc contents, edema of the nerve root diminishes, and retraction of nucleus tissue from the nerve root.

decreased. Pressure cannot be withstood and collapse of the discs can then be anticipated.

In the normal nucleus,[3] the collagen network of fibers, surrounded by the polysaccharide protein complex, undergoes change during a normal life span. The total protein content of the nucleus remains constant, but as the fourth decade is reached, the polysaccharide element has increased. After the fourth decade it falls. As it falls, the associated build up of collagen is also in evidence. As collagen is built up, the nucleus reaches a state of fibrosis; thus with the breakdown of the nuclear gel, the mechanics of the intervertebral disc are altered. The disc can no longer function as a semi-incompressible fulcrum fcr intervertebral movement nor does it distribute pressure equally over the annulus and vertebral end plates. Lindblom[13] has suggested that compression is a major factor in producing degenerative change and this abnormal and constant pressure might cause changes that may lead to annular rupture. Charnley[11] has also demonstrated that the nucleus, under positive pressure, slightly distends the elastic annuals which, when healthy, retains its position. When the annulus gives way due to changes within its consistency, the nucleus tends to bulge through the defect in the annulus. With further chemical change from aging, the annulus is completely destroyed; the disc material protrudes outside the annulus causing pain by irritating the sensory nerve and by pressure upon the nerve root. With further collagenous occurring in the ruptured or perforated annulus, the nucleus undergoes further change, increasing its collagen consistency and becoming further fibrosed. This collagen material is found on disc explorations at surgery. These changes can occur in the absence of symptoms. Armstrong[14] describes these changes in the disc, from its normal appearance to its degenerative stages both anatomically and chemically. The changes fall into three major categories which may be characterized by: 1) the stage of disintegration; 2) the stage of protrusion; 3) the stage of fibrosis and healing. See Table I. With the facts now known as to the anatomy of the disc and the surrounding structures, the nerve supply and the anatomical derangement, symptoms may be associated with these three stages of disintegration, protrusion, and fibrosis of the disc.

Stage I — Disintegration

The pain may be generalized or localized over the back in the disc area or surrounding soft tissue. The overlying muscles may go into spasm for protection. This initial spasm leaves in time, as less and less protection is needed. A residual ache may be the only symptom. In this stage, there are no symptoms of root pain.

Stage II — Protrusion

The nerve root is irritated as the nucleus pulposus material is protruded through the annulus and extends onto the nerve root or nerve root and vertebral canal. The neurological findings are commensurate with the pressure[15] on the nerve root and/or are aggravated by edema, spasm, and emotions. The mental stress may be a contributing factor. The direct amount of pressure on a nerve will elicit symptoms that may be in the buttocks, thighs, legs, or feet or a combination of all.

The symptoms may consist of paresthesiae and or sensory dermatome loss. There may be motor symptoms such as weakness and atrophy.

Stage III — Fibrosis or healing

As the nerve root is released, edema subsides; pain and the symptoms, mentioned above, regress. The reversal to Stage I and then to an asymptomatic stage can be documented and the individual returns to full function. In this stage, all neurological findings and symptoms are reversed.

From a clinical standpoint, see Table II, the symptoms presented by the individual can be correlated with the anatomical facts, see Table III. As the patient is followed, the symptoms delineate the stages of disc pathology and prognosis forecasted.

The diagnosis is made by obtaining a thorough history, by repeated examinations, and by follow-up. A complete orthopedic and neurological examination has to be done. The findings should be documented. With subsequent examinations, comparison delineates developments. The history should also be elicited as to the mechanism of the injury. This will be most helpful in delineating the problem and understanding the findings which may range from a simple sprain to a disc lesion which may or may not incorporate a fracture of the vertebral body and/or component parts of the vertebral spine.

The tests which are used to elicit findings of the vertebral spine are based primarily on the effects of spinal movement on the adjacent structures. Any and all tests which can be used well by the examiner should be employed; and with experience, he can judge which tests are more helpful in his hands. A more accurate diagnosis can then be reached.

TABLE II

CLINICAL CLASSIFICATION

Class A: Acute, sharp pain localized with muscle spasm. No radiation of pain.

Class B: More generalized pain in the low back, more severe than Class A. Muscle spasm and local radiation of discomfort to the opposite side of the buttocks.

Class C: Pain may be as in Class A or Class B, but definite radiation or referred pain to lower segment, hip, leg, abdomen, etc.

- Type a. No specific neurological findings, paresthesias only.
- Type b. Some neuromotor or sensory changes.
- Type c. Atrophy of leg muscles, etc., plus Type b symptomatology.

Class D: Direct contusion by history. May have symptomatology of Classes A. B, or C.

Class E: Fracture—compression type, etc. May have symptomatology of Classes A. B, or C.

The spinal cord mobility is in check or control by means of the ligaments and muscles about the spinal column, and the degree of mobility is directly related to these structures. Other structures indirectly affect the spine: the abdominal cavity and the chest cavity.[16,17] The most important test is the effect of straight leg raising and the Lasegue test[18,19] on spinal movement. The test is based on the effects of the spinal cord movement within the spinal canal and the effects on the movement of the spinal nerve root in its extrathecal course upon raising the extremity. The range of movement of the root has been observed to be greatest at the L5,S1 vertebrae position and decreases with less movement as the L1 vertebra is approached. The movement may vary from 2 to 5 mm. up to 4 to 8 mm.[20] Charnley has further pointed out that the root movement does not occur uniformly through the 90 degrees of straight leg raising which is normally possible. The root remains stationary until the leg has reached an angle between 30° and 40° above the horizontal. Beyond that, it starts to move suddenly and goes on moving until 70° is reached. Beyond this point, movement is slow. By the time the leg has reached 90°, the root has been stationary for some time. A second test utilizes motion of the spine at the hips. Standing erect and flexing at the hips with the arms dependant, the distance that the extended hands come within reaching the floor is measured. A third test is to have the patient sit on a table with the legs and feet dangling. Each of the lower extremities is extended at the hip with the knee held in full extension; this is done with the legs individually and also together. The fourth test is to apply pressure on the intervertebral space by pushing on the spinous process or to either side of the process eliciting discomfort. This test can be performed with the patient bending forward at the hips or with the patient lying in a prone position. The sensory dermatome distribution of the nerve root in the lower extremities and buttocks should be outlined.[21] Measurement for atrophy of the buttocks, thighs, and calves should be recorded. It is important to document the reflexes in the lower extremities, as well as the nerve root compression on the crossed leg extension test. It has been shown that when the one leg is raised, the lower roots on the opposite side emerge from the foramen and move towards the midline.[22] In the presence of a paracaudal protrusion,[23 & 24] the movement may bring a root into contact with the nuclear tumor, thus causing a rise in root tension which results in symptoms and a positive test.

It has also been of interest to observe postural scoliosis in relation to root tension. The scoliosis and/or muscle spasm allows the affected joints to be immobilized and protected. Scoliosis due to muscle spasm or root pain has usually been thought to be on the side of the lesion, though this is not always so. When a protrusion is medial to the nerve root, the root tension may be relieved by a lumbar scoliosis that is concave towards the side of the lesion. If the protrusion is lateral to the affected nerve root, the scoliosis will relieve tension if it is convex towards the side of the lesion. This may explain the confusion that occasionally arises when a scoliosis seems to be contrary to the symptom complex presented by the patient.

TABLE III

MANIFESTATIONS OF DISC DISEASE

Anatomical Changes Versus Clinical Findings

Stage I lesion incorporates Classes A and B.

Stage II lesion incorporates Class C.

Stage 1 or II lesion may be present in Classes D and E.

Correlation of this information as to the anatomy, chemistry, and physiology of the disc and surrounding structures has generated conclusions that can be applied to the clinical picture presented by the patient. With repetition and expanding knowledge, the symptom complex of disc injury and back pain can be correlated and understood with some degree of accuracy. With aging, the spine undergoes degenerative changes due to alterations. The disc can collapse. The disc material can be extruded with or without a symptom sequence occurring. A review of spine x-rays of asymptomatic individuals will confirm this fact. The symptom complex may be hastened with an injury, or changes can be manifested which have already been present or they may be aggravated. An x-ray examination of potential workers who will do heavy work in industry is necessary. The one injury the patient complains of is not the inception of the disease process but may only be one stage in the further degeneration of the disc, or he may have pain arising in the posterior joints of a degenerated disc.

Experience during the past fifteen years of examining more than three thousand individuals with low back pain has been an education in formulating and understanding these basic concepts and applying them for therapeutic value. During this period of time, 882 patients have been followed from the inception of their injury to the date of full return to activity. Many have been seen thereafter for other injuries but with no further com-

TABLE IV

Anatomical Classification	*No. of Cases*	*Clinical Classification*	*No. of Cases*	*Percentage of Total Cases*	*Average Duration of Symptoms*
Non-Traumatic	5	Non-Traumatic	5		
Sprains	78	Sprains	78	3%	2 to 3 weeks
Stage I	615	Class A	437	49%	2 days to 6-7 weeks (average 2-3 weeks)
		Class B	178	20%	2 weeks to 6-7 months (average 1-2 months)
Stage II	113	Class C		13%	
		Type a	90		5 weeks to 26 months (average 8-9 months)
		Type b	18		9 months to 2½ years.**
		Type c	5		
Malingerers	2				
Petite Triangle Hernia	1				
Tuberculous Spine	1				
Sacroiliac Joint	1				
Contusions	66	Class D		7.4%	
Stage I		Class A	43		average 4 weeks
		Class B	20		average 3 months
Stage II		Class C	3		average 15 months
Fractures (Compression Type)	6	Class E		1%	
Stage I		Class B	3		1-8 months
Stage II	3	Class C (Type b)	3		8-11 months
Total	888				**6 patients have not returned to work

plaints of the low back problem that initially brought them to the physician.

Of this entire group, (11 or 1.2%) have had surgery; and 877 (or 98.8%) have been treated without surgery.

In Table IV, there is an analysis of the patients seen in these categories with an average duration of symptoms.

Forty-four individuals have been seen and treated on two separate occasions of recurrence of their low back symptoms with full return to activities. Eight were seen who had three exacerbations. One has been seen with four recurrences.

Of major interest is the number of patients in Stage II, Class C, 113 in all. In Type a., 90 patients showed evidence of root pain and were treated medically. Of the 23 patients in Types b. and c., 11 were treated surgically and 12 were treated medically. Of the medical cases, all have responded well and have returned to full active work. Of the 11 cases treated surgically, one has had an excellent result; one had no change after surgery; two had fair results; and seven had poor results. Six of these seven poor results have had repeated explorations numbering from one to four; some with and some without fusions and cordotomies. None of these has returned to work.

The aim of the physician should be to restore stability of the spine, to relieve pain by releasing nerve root compression or arthritic change, and to build up the patient's back with the proper postural exercises, good posture techniques, good sound care at work and at home, and judicious use of sedentary states of activity with a gradual return to full activity as symptoms and time warrant. The treatment consists of all modalities which assist the disc in being relieved of pressure and change due to stress to prevent further disc protrusion and further degeneration. The patient has to be reassured. This can only be done if the physician understands the physiopathology[25,26,27] that is occurring and is able to convey this positively to the patient.

Modalities such as the use of heat, bed rest, analgesics, ultrasound, back support, and tincture of time are all necessary adjuncts. They all play a part in the course of the treatment. Surgery is rarely necessary. Neurological changes can be reversed. Surgery is only to be used after conservative management has failed and definite motor changes are elicited that are irreversible. Then, and only then, under controlled conditions, should the patient be surgically explored. The treating physician thus has to be sympathetic, understanding, explanatory, and reassuring.

Conclusion

An evaluation of a treatment of low back pain in the working environment has been presented with a resume of the etiology, anatomy, chemistry, and physiopathology of the disc lesion.

This method of treatment utilizes the present knowledge of the poorly understood low back syndrome minimizing the iatrogenic complications.

REFERENCES

1. Mixter, W. J. and Barr, J. S.: Rupture of the Intervertebral Disc with the Involvement of Spinal Canal; New England Journal of Medicine, 211:210-215 1934.
2. Gray's Anatomy: Goss; 27th Edition, Lea and Febiger.
3. Mitchell, P. E. G.; Hendry, N. G. C. and Billewicz, W. Z.: The Chemical Background of Intervertebral Disc Prolapse; Journal of Bone and Joint Surgery, 43-B: 141-151 1961.
4. Von Luschka, H.: Die Halbgelenke des menschlichen Korpers; Vol. 4 Berlin, G. Reimer 1858.
5. Roofe, P. G.: Innervation of Annulus Fibrosis and Posterior Longitudinal Ligament; Archives of Pathology, 27:201-211 1939.
6. Pedersen, H. E.; Blunck, C. F. J. and Gardner, E: The Anatomy of Lumbarsacral Posterior Rami and Meningeal Branches of Spinal Nerves (sinu-vertebral nerves); Journal of Bone and Joint Surgery, 38-A:377-391 1956.
7. Burns, B. H. and Ellis, V. H.: Recent Advances in Orthopedic Surgery, p. 181, London, Churchill 1937.
8. Harris, R. I. and MacNab, I.: Structural Changes in Lumbar Intervertebral Discs; Their Relationships to Low Back Pain and Sciatica; Journal of Bone and Joint Surgery, 36-B:304-322 May 1954.
9. Hirsch, C.: Mechanical Response in Normal and Degenerated Lumbar Disc; Journal of Bone and Joint Surgery, 38-A:242-243, June 1956.
10. Falconer, M. A.; McGeorge, M. and Begg, A. C.: Observations on the Cause and Mechanism of Symptom-production in Sciatica and Low Back Pain; Journal of Neurology, Neurosurgery, and Psychiatry, 11:13-26, 1948.
11. Charnley, John: Imbibition of Fluid as a Cause of Herniation of the Nucleous Pulposus; Lancet, 1:124-127, 1952.
12. Hendry, N. G. C.: The Hydration of the Nucleus Pulposus and Its Relation to Intervertebral Disc Derangement; Journal of Bone and Joint Surgery, 40-B:132-144, 1958.
13. Lindblom, Kurt: Intervertebral Disc Degeneration Considered as a Pressure Atrophy; Journal of Bone and Joint Surgery, 39-A: 933-945, 1957.
14. Armstrong, J. R.: Lumbar Disc Lesions; Williams and Wilkins, Third Edition.
15. Scott, J. C.: Stress Factors in the Disc Syndrome; Journal of Bone and Joint Surgery; 37-B:107-111, 1955.
16. Morris, J. M,; Lucas, D. B. and Bresler, B.: Role of the Trunk in Stability of the Spine; Journal of Bone and Joint Surgery, 43-A:327-351, 1961.
17. Davis, P. R. and Troup, J. D. G.: Pressure in the Trunk Cavities when Pulling, Pushing, and Lifting; Ergonomics, Vol. 7, No. 4.
18. Woodhall, B. and Hayes, G. J.: The Well-leg Raising Test of Fajersztajan in the Diagnosis of Ruptured Lumbar Intervertebral Disc; Journal of Bone and Joint Surgery, 32-A:786-792, 1950.
19. Allbrook, D.: Movements of the Lumbar Spinal Column; Journal of Bone and Joint Surgery, 39-B:339-345, 1957.
20. Charnley, John: Orthopedic Signs in the Diagnosis of Disc Protruson; Lancet 1, 186-192, 1951.
21. Inman, V. T. and Saunders, J. B. de C. M.: Anatomicophysiological Aspects of Injuries to the Intervertebral Disc; Journal of Bone and Joint Surgery, 29:2, 1947.
22. O'Connell, J. E. A.: Sciatica and the Mechanism of the Production of the Clinical Syndrome in Protrusion of the Lumbar Intervertebral Disc; British Journal of Surgery, 30:120, 315, 1943.
23. Smyth, M. J. and Wright, U.: Sciatica and the Intervertebral Disc; Journal of Bone and Joint surgery, 40-A:1401-1418, 1958.
24. O'Connell, J. E. A.: Protrusion of the Lumbar Intervertebral Disc; Journal of Bone and Joint Surgery, 33-B:8-30, 1951.
25. Davis, Peter R.: Posture of the Trunk During the Lifting of Weights; British Medical Journal, Jan. 10, 1958 p. 87.
26. Whitney, R. J.: The Strength of the Lifting Action in Man; Ergonomics, Vol. I, No. 2, 1958.
27. Noro, Leo: Medical Aspects of Weight Carrying; Industrial Medicine and Surgery, Vol. 36, No. 3, March 1967, p. 192.

TRANSPORTATION TO AUSTRALIA AND NEW ZEALAND

The Port Line Ltd., a British Flag Carrier with a fleet of some 33 vessels, maintains regular freight services between the United States and ports in Canada, Australia and New Zealand. Some vessels carry no passengers, others carry up to 12. In all instances, the services of a ship's surgeon are desired; a doctor who may be in this country doing post-graduate or other further study and would like transportation in exchange for his medical services on board ship. Doctors, (men or women) signed on, become members of the vessel's crew. It is possible they could be again signed on a vessel proceeding from Australia to the continent or other points. Interested physicians may write: Port Line Ltd. c/o Funch, Edye & Co., Inc., 25 Broadway, New York, N.Y. 10004. Att: Mr. L. J.ble.

THE PHYSICIAN AND THE CHALLENGE OF SEX EDUCATION

• The medical profession is being urged to assume some responsibility in the total area of sex education. This article examines the qualifications of the physician for this role and makes suggestions on how to make up for any deficiencies which are inherent in medical education.

EUGENE B. LINTON, M.D.

In talking about sex education, Dr. Mary Calderone, Executive Director of Sex Education and Information Council of the United States, once made the remark that we should not apologize for using the words sex education because after all, sex education is truly education in its broadest sense, not just the anatomy and physiology of the reproductive organs. If we but consider the fact that everything one does, says, thinks — his attitudes, actions and decisions — is colored by his gender, we can gain an inkling of the breadth of the subject. For this reason, sex education should be an intimate part of the total education of an individual.

In considering the subject, three questions seem to present themselves:

1. Wherein is the physician uniquely qualified to participate in sex education?
2. Where is the physician deficient in his knowledge to participate in sex education?
3. What can the physician do to promote sex education, as well as educate himself to meet the challenge?

In the process of introspection, it would seem that the physician is uniquely qualified to participate in sex education in that he has useful knowledge of anatomy and physiology with which he may help start pilot programs and stimulate community action. This knowledge is enhanced by the very nature of the physician's status in the community. He, above all in the community, can bring up the subject and promote its teaching, without being suspect by his other fellow citizens. Organized medicine today is looked to for this type of leadership. The opportunity to carry on education can be found in his office, as well as in schools, civic organizations and organized religious activities. We have done a great deal toward public education concerning cancer, mental illness, and public health, therefore sex education is a natural for the medical profession.

The physician by virtue of his long and intimate contact with, and observation of people is able to learn a great deal about the behavior of people, thus creating a background in practical experience which makes it possible to implement his basic scientific knowledge.

Harold Lief[1], in his interesting study of the medical student, found that medical students are somewhat prudish, Victorian and inhibited in their sexual attitudes and practices. This comes as quite a surprise to many who considered the medical student to be anything but prudish in this area. It has been our experience in working with medical students that many are very reluctant to discuss the male-

---

Dr. Linton is Assistant Professor, Department of Obstetrics & Gynecology, Bowman Gray School of Medicine, Winston-Salem, North Carolina.

female sexual relationship at the patient level with the patient. They find it very difficult at first, to take detailed marital histories. Many of us who are several years beyond our medical education may be no better off. For example, why has no one studied the effect of radiation treatment for cancer of the cervix on the sexual life of woman, either old or young? Why is there little accurate data available concerning sexual activity for the cardiac patient?

Until recently, medical education has ignored the individual as a behaviorally sexual being and has done little to teach the embryonic practitioner how to handle problems relating to the area of human sexuality. Much of the little that is in the texts is an inaccurate myth handed down from ancient times. It is still almost impossible to get well qualified physicians to do badly needed research in human sexuality. The work of Masters and Associates[2] has received anything but enthusiastic support from the medical profession and it will probably be years before anyone will seek to confirm their observations on sexual physiology.

From the foregoing we can see that as average practicing physicians there are many areas in which we have a considerable amount of inhibition, lack of knowledge, and little appreciation of the problems posed in our society today because of lack of good sex education.

What can the physician do to promote sex education in his own community?

First, he must be sold on the concept that sex education in its broadest sense should be a part of the organized educational process of young people today; that he cannot tolerate poor education here anymore than he can tolerate poor education in any other field. He must realize that sex education is not comprised of a short series of talks, sponsored by the high school PTA after girls from several prominent families become pregnant and have to drop out of school. Usually under these circumstances the physician and/or nurse is called on to give one or two talks on anatomy and physiology, trying to implant the fear of venereal disease and pregnancy into the student body and then feel that the job is done. The students heave a collective sigh of relief, are delighted that this ordeal is over, and go merrily on their way with nothing really changed. The PTA and the participating physicians are often the sole benefactors of such a program. The idea that they have done some great good for the students is usually erroneous. Intentions are good but follow up is minimal so that long term benefit is lacking.

The physician should inform himself on what is current in the area of sex education. The organization previously mentioned, Sex Education and Information Council of the United States, 1790 Broadway, New York, New York, is delighted to receive any and all requests for such information as they have. Their periodical is well worth reading and can keep the physician current on available materials and methods. He should be willing to promote at higher legislative levels, the inclusion of this material in the regular school curriculum. He should be willing to participate in refresher courses and workshops for those who will teach young people. This would include all areas of education, in schools, churches, and civic organizations.

Just because the physician has a more detailed knowledge of anatomy and physiology does not mean he is an expert in sexual behavior. The physician must recognize this and be willing to learn by cross fertilization with other disciplines including marriage counseling, sociology and the other family life sciences. He must recognize that as yet there is much to learn about the motivations, attitudes and mores of people and understand that a positive approach to education is most necessary.

When medical opinion concerning a certain disease is on trial we are very quick to take a positive stand improving our concepts. This is not necessarily so when we are called on to take a stand on what we consider to be right, concerning sexual behavior. We usually have an opinion and often a strong one, but are we able to prove this by a logical positive approach? Young people today, in their questioning of authority, are not defying that authority necessarily but are often asking that

Continued on Page 210

ZIEVE'S SYNDROME

A Case Report

Charles Allen, M.D.

A 56-year-old white, married, construction foreman was admitted to the hospital with an acute episode of abdominal pain, nausea and vomiting, of one day's duration.

The history of the present illness actually dated back four months prior to admission when the patient first noted indigestion and occasional bouts of nausea and vomiting. He never had severe epigastric or abdominal pain prior to the present illness, but would frequently have what he described as heartburn or dyspepsia.

He related the present pain to eating some fried chicken the night prior to admission. Other than this particular episode, he had no history of food intolerance, no diarrhea, melena, hematemesis, or nocturnal pain. He admitted to being a rather heavy drinker — as much as one to two pints of whiskey a day.

The pain on admission to the hospital caused the patient to move and squirm about, and he actually found his most comfortable position lying flat on his abdomen with the pain being more severe lying on his back.

Past history revealed that he had been overweight all of his adult life. He had typhoid fever at age five and gonorrhea treated as a young man. He had a kidney stone twelve years prior to this admission, which was passed spontaneously. He had no operations, severe allergies, or injuries.

Family history: His father died at 78 of a heart attack; mother died at age 29 of a brain abscess. There was no family history of diabetes, heart disease (other than his father), tuberculosis, thyroid disease, or other familial illnesses. Social history: patient smoked approximately a pack and a half of cigarettes a day for forty years, and his use of alcohol was a little more than a pint per day. He never had a "problem" with alcohol in that he never missed time from work. Review of systems: general health was good except for the abovementioned illnesses. Skin: no generalized or localized eruptions ever noted. Head, eyes, ears, nose and throat: only occasional upper respiratory infections; he must wear trifocals for visual acuity; otherwise, no change in special senses. He noticed no chronic cough, hemoptysis although he did admit to an occasional "cigarette cough". He has mild increasing exertional dyspnea, probably due to increase in weight over the past five years. There has been no anginal-like pain, ankle edema, paroxysmal nocturnal dyspnea, palpitations, cyanosis, past history of rheumatic fever or heart murmur. Genitourinary: history of kidney stone as mentioned above. On admission, no dysuria, pyuria, hematuria, nocturia, urgency, frequency, incontinence, or hesitancy. Musculoskeletal: no rheumatism, arthritis, or back pain noted. Neuro-psychiatric: he has never been treated for psychiatric disorders; denies paralysis, weakness, convulsions, loss of consciousness, or other neurologic disorders.

Physical examination on admission revealed a well-developed, well-nourished obese white man in moderate distress. His face was flushed, he was unable to lie still on the examin-

---

Dr. Allen is Consultant in Cardiology, Co-director of Intensive Care Unit, Kent General Hospital, Dover, Delaware.

ing stretcher. His temperature was 99.8F.; pulse, 100 and regular; respirations, 16; blood pressure was 140/72; weight 217 lb.; height, 69 inches. Examination of the skin revealed no generalized or localized eruptions noted. Eyes: conjunctiva, pink; sclera, muddy but not icteric; pupils, round, regular and equal; the right pupil was slightly larger than the left, both reacted equally to light and accommodation; extra-ocular movements were good; funduscopic examination revealed no abnormalities. Ears: canals, clear; drums, intact; no signs of acute or chronic infection. Nose: airways, open, mucosa appeared normal; no signs of infection. Mouth: edentulous; upper and lower plates; tongue and buccal mucosa appear normal. Throat: post-nasal drip noted; tonsils, atrophic; no signs of acute or chronic infection. Chest: slight increased pulpo-axial diameter; both diaphragms moved well; scattered rhonchi throughout both lung fields, but these did clear with cough. Heart was not enlarged to percussion; heart sounds were of good quality; regular rhythm at a rate of 100 per minute; aortic second sound was equal to pulmonic second sound; no murmers noted. Abdomen: soft, obese; rather marked tenderness and some guarding in the right upper quadrant and into the epigastric area; liver was not felt initially, probably due to this guarding, but three days after admission, the liver was felt four centimeters below the right costal margin in the midclavicular line. On epigastric pressure, the patient complained of a pain penetrating through from the epigastrium to the mid portion of his thoracic spine. No other organs or masses could be noted. Both femoral arteries pulsed well. Genitalia: normal circumcised adult male. Lymphatic: no generalized or localized adenopathy. Extremities: revealed good peripheral pulses; no edema, ulcerations, clubbing, or cyanosis noted; there were a few superficial varicosities. Neurological examination: sensorium, clear; cranial nerves, intact; deep tendon reflexes, active and equal; no pathologic reflexes; strength and sensation were good; station and gait were not tested on admission, but shortly after admission were found to be normal. Rectal examination revealed a few external skin tags; rectum was free of masses; stool was soft brown; prostate was of normal size and consistency.

Laboratory data on admission: Hemoglobin, 16 grams; hematocrit, 50 per cent; white blood count, 17,000; segmented cells, 74 per cent; stab cells, 4 per cent; lymphocytes, 21 per cent; monocytes, 1 per cent. The blood urea nitrogen was 6.7 milligrams per cent; the fasting blood sugar, 115 milligrams per cent. The initial serum was reported as milky, opalescent; cholesterol was 900 milligrams per cent; initial serum amylase was 52 units. The serum bilirubin was difficult to read because of the milky appearance of the serum but was approximately 2 milligrams per cent, indirect. Alkaline phosphatase was 6 Bodansky units.

The urinary urobilinogen was positive, 1:64; urinalysis was otherwise normal. Cholesterol repeated two days after admission was 450 milligrams per cent; white blood count repeated at the same time revealed 10,000 white blood cells with a perfectly normal differential. VDRL was nonreactive; protein bound iodine was 2.6 micrograms per cent. A repeat bilirubin had a total bilirubin of 2.37 milligrams per cent with indirect, 1.12 milligrams per cent. Serum transaminase was 75 units on the third hospital day. Bleeding time was two minutes; coagulation time (Lee-White), five minutes; prothrombin was 14 seconds with a control of 14 seconds, activity, 100 per cent. Bromsulphalein test done on the sixth hospital day revealed 16 per cent of the dye retained at 45 minutes. A repeat cholesterol nine days after admission was 295 milligrams per cent. Protein electrophoresis revealed a total protein of 5.69 grams per cent; albumin was 2.23 grams; alpha-1 was .25 grams; alpha-2, .74 grams; beta, 1.48 grams; gamma, .99 grams. This was interpreted as a slightly elevated beta globulin, and the total protein was on the low side of normal. An electrocardiogram was interpreted as having nonspecific T-wave changes. Chest x-ray showed the heart to be within normal limits in size; lungs were clear. Gallbladder studies done with a four-day reenforced technique revealed no calculi in the gallbladder. Upper gastrointestinal series: mild gastric hypertrophy; otherwise, no abnormalities. An intravenous pyelogram was within normal limits. A liver biopsy was attempted, but because of the patient's size, this was not successful.

Course in the hospital: The patient was admitted with the presumptive diagnosis of acute cholecystitis and possibly pancreatitis. Shortly after admission, the blood was drawn, and it was noted that his serum was milky and obviously had a high lipid content. A possibility of this having been a familial hypercholesterolemia was initially entertained, but by the second hospital day, his serum had completely cleared, and his cholesterol had fallen to 450 milligrams per cent from an admission of over 900 milligrams. At this time, a diagnosis of Zieve's Syndrome was made. The patient was kept initially on a clear liquid, later a low fat diet, received antacids and antispasmodics, and by the third hospital day, was totally free of pain. His temperature reached a high of 100.8° on his first day, but after his second night in the hospital, was normal throughout the remainder of his hospitalization.

Many of the above laboratory studies were performed after the initial suggestion of Zieve's syndrome, and at this time, the patient did admit to being a heavier drinker than he had on admission. It was felt that he did have Laennec's cirrhosis, and on the basis of his abnormal liver function, including a bromsulphalein, this seemed to be a rather secure diagnosis. The pain on admission was felt to be pancreatitis, and did respond to Pro-banthine, bed rest, and diet. At no time did he require narcotics for pain.

By the third hospital day, the patient was ready to sign out of the hospital, but the gastrointestinal studies were obtained as well as a concentrated gallbladder study which ruled out cholelithiasis. He was discharged on an antispasmodic in the form of Pro-banthine and a bland diet. He was urged to abstain from alcohol.

The patient remained relatively well for approximately six months, but then apparently started drinking again, and has had recurrent abdominal pain over the next two years. He has refused to follow instructions, has not kept office appointments, so that a follow up on his blood studies, liver functions, etc., has not been possible.

Discussion

The syndrome which now bears his name was first described by Zieve in 1958. The clinical triad of jaundice, transient hyperlipemia, and hemolytic anemia is associated invariably with abdominal pain and low-grade fever.[1] This fairly well describes our patient with the exception that hemolysis could not be definitely proved since an attempted reticulocyte count was never reported. He did, however, have a slightly elevated indirect bilirubin. He certainly had no anemia, although he has had a plethoric appearance and may well have had some fall in hemoglobin from a polycythemic level. The most striking features of this case were the abdominal pains, thought to be due to pancreatitis in an alcoholic man, and the obviously "milky" serum.

The hemolytic anemia usually reported in the literature has not been severe, and normal hemoglobin values are frequently present, indicating that the marrow is able to compensate for the destruction of red cells.[2,3] Zieve postulated that an abnormal lipid, probably lysolecithin, caused the hemolysis. Lysolecithin, usually not found in serum, could be produced by the liver and pancreatic derangement. The pancreas does produce a lecithinolipase, which acts on lecithin to produce lysolecithin.[1] Another possible factor might be a secondary "hypersplenism" since it has been well established that chronic liver disease of many causes can lead to a hypersplenic state. This would be a selective hypersplenism since only the red blood cell series is affected.[3] The bilirubin levels were not markedly elevated in 17 of the 23 reported cases,[1,2] the highest value being 2.8 milligrams per cent. This is associated with a fleeting elevation of cholesterol which would tend to rule out chronic obstructive liver disease.

The liver biopsies in the 27 reported cases revealed minimal liver damage in 15, mild in 11, severe in only one. This was often a fatty liver, and the jaundice that was clinically measurable was attributed to intra-hepatic cholestasis. The elevated alkaline phosphatase levels with normal studies for hepatic damage tended to confirm this finding. Generally, it can be stated that the liver biopsy is no real diagnostic help except that the biopsies in the reported cases have not shown far-advanced cirrhosis, but rather a fatty infiltration or mild early cirrhotic changes.

The pancreas has been incriminated as being diseased in these patients, although in most cases, the amylase levels have been normal. The obvious answer to this is that in chronic or relapsing pancreatitis, the amylase is frequently not elevated.[4] The abdominal pain is thought to be due to pancreatitis as was suspected in the present case.

In all of these original cases as well as six other reported cases by Kessel,[2] the hyperlipemia was transient, and the patients cleared their serum without specific therapy.

Three of the patients reported in the literature had exploratory laparotomies because of the intense pain. The present case had rather severe pain, although he was never truly considered a candidate for surgical intervention. Once the diagnosis was suspected we felt that the pancreas was in fact the cause of his abdominal pain and surgery was contraindicated.

Zieve's syndrome, probably more common than is currently believed, illustrates another of the protean manifestations of alcoholic cirrhosis. The entity is important to recognize since overly enthusiastic treatment of either the hemolysis or hyperlipemia or surgery for the abdominal pain can be avoided. Awareness is the key to the diagnosis. Whether the condition itself deserves a special name really isn't important; the important consideration is that one be aware that alcoholic cirrhosis associated with pancreatic dysfunction can give this clinical state.

Since this patient was first observed and brought this clinical syndrome to our attention, we have seen two and probably a third case that clearly fit into acute transient hyperlipemia due to hepatopancreatic damage in chronic alcoholics.

REFERENCES

1. Zieve, L.: "Jaundice, Hyperlipemia, and Hemolytic Anemia: A heretofore unrecognized syndrome associated with alcoholic fatty liver and Cirrhosis." *Annals of Internal Medicine*, 48: 471, 1958.
2. Kessel, L.: "Acute transient hyperlipemia due to hepatopancreatic damage in chronic alcoholics (Zieve's Syndrome)." *American Journal of Medicine*, 32:747, 1962.
3. Jones, P. N., Weinstein, I. M., Ettinger, R. H., and Capps, R. B.: "Decreased Red cell survival associated with liver disease." *Archives of Internal Medicine*, 95:93, 1955.
4. Sun, D. C. H.: "Diagnostic tests for chronic pancreatic disease." *Archives of Internal Medicine*, 115:57, 1965.

THE PHYSICIAN AND THE CHALLENGE OF SEX EDUCATION

Continued from Page 206

the authority be asserted with positive tangible reasons. It is here that the physician must educate himself so that when questioned (and without doubt he will be) he can acquit himself well. In spite of publicity to the contrary, the physician is still held in high regard in our society.

In summary, the practicing physician stands in a unique position today on the American scene, in regard to sex education. There is no other group in the United States who has the almost universal respect of people. The physician's attributes as well as his deficiencies have been considered. The former far outweigh the latter which can be corrected by effort and study and and the willingness to serve the best interest of society. The medical profession has made many contributions toward the betterment of our environment. It would seem that here is but another worthwhile challenge to which we can direct our energies.

REFERENCES

1. Lief, Harold I.: *Marriage Counseling in Medical Practice*. The University of North Carolina Press, Chapel Hill, 1964 Chapt. 18. Page 301.
2. Masters, W. H. and V. E. Johnson: *Human Sexual Response*, Little, Brown and Company, Boston, 1966.

GLANDULAR GLEANINGS

• In recent issues, the Editor and some of the Editorial Board have been reporting gleanings from various professional meetings that they have been privileged to attend. We would like to encourage this type of reporting by more Society members so that their colleagues in other specialties may also benefit from the experience of those meetings which they do not themselves attend.

Bernadine Z. Paulshock, M.D.

At the Endocrine Society's annual meeting, approximately 200 different papers and several symposia were presented. The greatest majority dealt with new concepts of hormone action and regulation, mostly of limited interest except to researchers since very little clinical observation or experimentation was reported.

Among the newest hormones, thyrocalcitonin (TCT), is becoming increasingly delineated as an important second hormone of the normal thyroid gland and an active participant in calcium and phosphorous metabolism. TCT has now been shown to be primarily a calcium lowering hormone in opposition to the calcium raising effects of the parathyroid hormone, parathormone (PTH). TCT is reported to do its work by increasing calcium deposition in bone and also by preventing bony resorption. Patients with hyperthyroidism frequently have hypercalcuria, hypercalcemia and demineralization of bone, suggesting that hyperthyroidism is associated with deficiency of TCT.

Many papers dealt with the hormones renin, aldosterone, and angiotensin. Because the differential diagnosis of hypertension must include consideration of the presence of an aldosterone secreting adenoma of the adrenal gland, a paper which reported a new method of distinguishing the presence of these tumors was especially interesting. Dr. P. E. Slaton and his co-workers have demonstrated that aldosterone secretion except when it is secondary to adrenal adenoma can be completely suppressed by three days therapy with 20 mgm. of desoxycorticosterone (DOCA), an observation not previously reported.

Antidiuretic hormone (ADH) which is known to be released by the posterior pituitary after its manufacture in the hypothalamus has been demonstrated also to be ectopically manufactured in certain cases of malignancy, including bronchogenic and pancreatic carcinomatosis with resultant clinically significant low sodium states resulting from its antidiuretic action.

Because of the frequent necessity of administration of thyroid preparations to pregnant women, a paper which reported normal assay of circulating thyroxin in the cord blood of newly delivered babies of most mothers who received usual clinical doses of tri-iodothyronine (Cytomel) was reassuring.

It is currently fashionable to demonstrate circadian rhythms in the excretion of hormones. Recent evidence suggests great variability in a.m. and p.m. levels of testosterone in men and thyroid hormone secretion has now also been shown to be circadian except in patients with toxicity secondary to Grave's disease or toxic nodular goiter.

In five normal patients who underwent nephrectomy to serve as kidney donors, glu-

---

Dr. Paulshock is an Associate in Medicine and Attending Physician, Endocrine and Metabolic Clinic, Wilmington Medical Center.

cose tolerance was shown to become abnormal with persistence of high plasma insulin past the period of acute operative stress. This certainly deserves further investigation and adds a new worry to those charged with the responsibility of nephrectomizing healthy relatives of uremic patients.

Because of the wide use of *Maalox* and *Amphogel* in the management of patients with peptic disease, the demonstration of a phosphorus depletion syndrome after ordinary clinical doses of these antiacids was interesting. After administration of *Maalox*, 60 cc q.i.d., phosphorus excretion in the urine becomes negligible within a very few days and there is a concomitant increase in urinary calcium although hypercalcemia does not occur. In its marked forms, this may be associated with a clinical state characterized by anorexia, weakness, dizziness, bone pain, tremors, and parasthesias. This syndrome occurs even in the absence of parathyroid glands so it can not be attributed to a compensatory overactivity of the parathyroid gland.

Several abnormalities in growth hormone, insulin secretion, and fatty acid metabolism in obese patients were demonstrated to become completely normalized after successful weight loss. In man, fat mobilization has been shown to be increased after adrenergic blockade by Dibenzyline. Theophylline also increases lipolysis as does growth hormone, Phenformin (DBI) decreases both blood sugar and blood insulin response to glucose challenge with or without cortisone. These observations may eventually be of clinical utility in the management of human obesity.

The undersigned will refrain from attempting to report papers such as "In vitro aromatization vs. in vivo estrogen secretion by super-ovulated rat ovaries", or "The fine structure of Leydig's cells stimulated by human growth hormones in mature guinea pigs", although presumably somewhere someone cares.

THE AMERICAN COLLEGE OF PHYSICIANS

The ACP will sponsor 32 regional scientific meetings during the coming academic year. The September meetings, their locations and ACP Governors presiding are:

American College of Physicians *(New England Regional)*, Providence, R.I., Sept. 8-9. INFO: Irving A. Beck, M.D., 207 Waterman St., Providence, R.I.

American College of Physicians *(Arkansas/Oklahoma Regional)*, Hot Springs, Ark., Sept. 9. INFO: Jerome S. Levy, M.D., Doctors' Bldg., 500 S. University Ave., Little Rock, Ark.

American College of Physicians *(Kentucky Regional)*, Louisville, Ky., Sept. 16, INFO: Carl H. Fortune, M.D., 1221 S. Broadway, Lexington, Ky.

American College of Physicians *(Wisconsin Regional)*, Land-O-Lakes, Wisc., Sept. 15-16. INFO: J. Leroy Sims, M.D., University Hospitals, Madison, Wisc.

American College of Physicians *(Indiana Regional)*, Indianapolis, Ind., Sept. 16-17. INFO: Glenn W. Irwin, Jr., M.D., Indiana U. Medical Center, 1040-1232 W. Michigan St., Indianapolis, Ind.

American College of Physicians *(South Dakota Regional)*, Vermillion, S. Dak., Sept. 22-23. INFO: Theodore H. Sattler, M.D., 400 Park Ave., Yankton, S. Dak.

American College of Physicians *(Southeastern Regional)*, Sea Island, Ga., Sept. 29-30. INFO: Tully T. Blalock, M.D., 2948 Habersham Way, N.E., Atlanta, Ga.

American College of Physicians *(Montana/Wyoming Regional)*, Casper, Wyo., Sept. 30. INFO: Alfred M. Fulton, Jr., M.D., 3120 W. MacDonald Dr., Billings, Mont.

RABIES PROPHYLAXIS

• The Delaware State Board of Health in presenting information of topical interest to the physician, is reprinting this article on rabies from the Public Health Service Advisory Committee Report on Immunization Practices.

In addition to the information presented in the body of the article, we would like to emphasize that, animals suspected of rabies should be confined under observation for ten days. If the animal dies, the head should be sent to the laboratory of the Board of Health in Dover, for examination. The head should not be frozen, but maintained under cool or refrigerated conditions.

The laboratory procedures for rabies examination consists of the three following tests:

1. Seller's method (regular staining).
2. Fluorescent Antibody method (fluorescent staining).
3. Mice Intracerebral Inoculation with emulsion of suspected brain tissue. The inoculated mice are then kept under observation for three weeks.

Finally, as a reference aid, a chart is provided at the end of the article which acts as a guide in listing the recommended Antirabies Prophylaxis.

The Public Health Service Advisory Committee on Immunization Practices meeting on February 17, 1967, issued the following recommendations on rabies prophylaxis for the United States.

Introduction

Although cases of rabies in humans are rare in the United States, thousands of persons receive rabies prophylaxis each year. The following approach to prevention is based on a contemporary interpretation of both the risk of infection and the efficacy of treatment and incorporate the basic concepts of the *WHO* Expert Committee on Rabies[1].

The problem of whether or not to immunize those bitten or scratched by animals suspected of being rabid is a perplexing one for physicians. All available methods of systemic treatment are complicated by numerous instances of adverse reactions, a few of which have resulted in death or permanent disability. Furthermore, the decision must be made immediately because the likelihood that any prophylactic measure will contribute to the prevention of rabies diminishes rapidly as the interval between exposure and treatment increases.

The acceptable evidence for efficacy of both active and passive immunization following exposure is derived largely from experimental studies in animals. Because rabies on occasion has developed in humans who received antirabies prophylaxes, the value of treatment has been questioned. However, evidence from laboratory and field experience in many areas of the world indicates postexposure prophylaxis can be highly effective when appropriately used.

Status of Rabies in the United States

The incidence of rabies in humans has declined from an average of 22 cases per year in 1946 through 1950, to 1 case per year in 1963 through 1966. Rabies in domestic animals has diminished similarly. In 1946, there were more than 8,000 cases of rabies in dogs, compared with 412 in 1966. Thus, the likelihood of humans being exposed to rabies by domestic animals has decreased greatly, although bites by dogs and cats continue to be responsible for the overwhelming majority of antirabies treatments.

In contrast, the disease in wildlife — especially skunks, foxes, and bats — has become increasingly prominent in recent years, accounting for more than 70 percent of all reported cases of animal rabies in 1966. During that year, only four States were reportedly free of wildlife rabies. Wild animals constitute the the most important source of infection for both domestic animals and man in the United States today.

Status of Antirabies Treatment in the United States

More than 30,000 people receive post-exposure antirabies treatment each year. However, there is no information regarding the number of persons actually exposed to rabid animals.

Nervous tissue origin rabies vaccine of the Semple type (*NTV*) was used almost exclusively in the United States until 1957, when the duck embryo origin vaccine (*DEV*) was licensed. More than 75 percent of those who received rabies prophylaxis in the United States in 1965 were given *DEV*.

There has been remarkable variation in the rate of adverse reactions associated with *NTV*. In the United States, it is generally accepted that one individual among 4,000 to 8,000 persons receiving *NTV* antirabies treatment develops neurologic complications. Death has been attributed to *NTV* in a ratio of one to every 35,000 persons treated.

Neurologic complications associated with *DEV* have been reported for one of every 25,000 persons treated. One possibly related death has occured among some 172,000 who have received *DEV* since its introduction.

Rationale of Treatment

Every exposure to possible rabies infection must be individually evaluated. In the United States, the following factors should be considered before specific antirabies treatment is initiated:

Species of biting animal involved
Carnivorous animals (especially skunks, foxes, coyotes, raccoons, dogs and cats) and bats are more likely to be infective than other animals. Bites of rodents seldom, if ever, require specific antirabies prophylaxis.

Circumstances of the biting incident
An *unprovoked* attack is more likely to mean that the animal is rabid. (Bites during attempts to feed or handle an apparently healthy animal should generally be regarded as *provoked*).

Extent and location of bite wound
The likelihood that rabies will result from a bite varies with its extent and location. For convenience in approaching management, two categories of exposure are widely accepted:

> *Severe:* Multiple or deep puncture wounds, and any bites on the head, face, neck, hands, or fingers.
>
> *Mild:* Scratches, lacerations, or single bites on areas of the body other than the head, face, neck, hands, or fingers. Open wounds, such as abrasions, which are suspected of being contaminated with saliva also belong in this category.

Vaccination status of the biting animal
An adult animal immunized properly with one or more doses of rabies vaccine has only a minimal chance of developing rabies and transmitting the virus.

Presence of rabies in the region
If adequate laboratory and field records indicate that there is no rabies infection in a domestic species within a given region, local health officials may be justified in taking this into consideration in any recommendations concerning antirabies treatment following a bite by that species.

Management of Biting Animals

A dog or cat that bites a human should be captured, confined, and observed by a veterinarian for at least 5 days, preferably 7 to 10. Any illness in the animal should be reported immediately to the local health department. If the animal dies, the head should be removed and shipped under refrigeration to a qualified laboratory for examination. Because clinical signs of rabies in a wild animal cannot be reliably interpreted, the animal should be killed at once and its brain examined for evidence of rabies.

Local Treatment of Wounds

Immediate and thorough local treatment of all bite wounds and scratches is perhaps the most effective means of preventing rabies. Experimentally, the incidence of rabies in animals can be markedly reduced by local therapy alone.

First-aid Treatment to be carried out immediately

Copious flushing with water alone, soap and water, or detergent and water.

Treatment by or under direction of a physician

1. Thorough flushing and cleansing of wound with soap solution. Quaternary ammonium compounds may also be used.*
2. If antirabies serum is indicated, a portion of the total dose should be thoroughly infiltrated around the wound. As in all instances in which horse serum is used, a careful history should be taken and tests for hypersensitivity performed.[2]
3. Tetanus prophylaxis[2] and measures to control bacterial infections as indicated.
4. Suturing of wound or other form of primary closure is *not* advised.

Post-exposure Prophylaxis

Active Immunization

Rabies Vaccine Preparations

Duck Embryo Vaccine (DEV)

Prepared from embryonated duck eggs infected with a fixed virus and inactivated with betapropiolactone.

Nervous Tissue Vaccine (NTV)

Prepared from rabbit brain infected with a fixed virus and inactivated by phenol at 37°C. (Semple type) or inactivated by ultraviolet irradiation.

Antigenicity of Vaccines

Antigenicity of *NTV* is often higher than that of *DEV* when tested in experimental animals. However, all lots of both vaccines must pass minimum potency tests established by the Division of Biologics Standards, National Institutes of Health. There is evidence that the serum antibody response in humans is detectable earlier following *DEV* vaccination, but the eventual level of response is frequently higher with *NTV*.

Effectiveness of Vaccines in Humans

In the United States, comparative effectiveness of vaccines can only be judged by frequencies of failure to prevent disease. During the years 1957 through 1967 when both vaccines were available, there were 6 rabies deaths among 117,700 *NTV*-treated persons (1:19,600) and 7 deaths among the 172,000 treated with *DEV* (1:24,500).

Reactions

Erythema, pruritis, pain, and tenderness at the site of inoculation are common with both *DEV* and *NTV*. Systemic responses, including low grade fever, or rarely shock, may occasionally occur late in the course of therapy with either vaccine, usually after five to eight doses. In rare instances, serious reactions have occurred after the first dose of *DEV* or *NTV*, particularly in persons previously sensitized with vaccines containing avian or rabbit brain tissue.

As described previously, neuroparalytic reactions occur rarely with *DEV*. They are considerably more frequent following *NTV*, especially after repeated courses of treatment with this preparation.

Choice of Vaccine

Rates of treatment failures with the two vaccines are not significantly different; therefore, the lower frequency of central nervous system reaction with *DEV* makes it preferable to *NTV*.

---

*All traces of soap should be removed before quaternary ammonium compounds are applied because soap neutralizes their activity.

Schedule for Vaccine Use

Primary Course

At least 14 single, daily injections of vaccine in the dose recommended by the manufacturer. These should be given subcutaneously in the abdomen, lower back, or lateral aspect of thighs; rotation of sites is recommended.

For severe exposures, 21 doses of vaccine are recommended. These may be given as 21 daily injections or 14 doses during the first 7 days (either two separate injections or a double dose), the remaining doses given singly during the next 7 days.

Booster Immunization

Two booster doses, one 10 days and the other at least 20 days after completion of the primary course. The two booster doses are particularly important if antirabies serum was used in the initial therapy.

Precautions

When rabies vaccine must be given to a person with a history of hypersensitivity, especially to avian or rabbit tissues, antihistaminic drugs should be used. Epinephrine is helpful in those of the anaphylactoid type.

If serious allergic manifestations preclude continuation of prophylaxis with one vaccine, the other may be used.

When meningeal or neuroparalytic reactions develop, vaccine treatment should be discontinued altogether. Corticotrophin of corticosteriods are used for such complications.

Passive Immunization

Hyperimmune serum has proved effective in preventing rabies. Its use in combination with vaccine is considered the best post-exposure prophylaxis. However, the only preparation of antirabies serum now available in the United States is of equine origin. Because horse serum induces allergic reaction in at least 20 percent of those receiving it, its use must be limited.

It is recommended for most exposures classified as severe, and for *all* bites by rabid animals, wild carnivores, and bats. When indicated, antirabies serum should be used regardless of the interval between exposure and treatment.

The dose recommended is 1000 units (one vial) per 40 pounds of body weight. A portion of the antiserum is used to infiltrate the wound, and the remainder administered intramuscularly. As previously noted, a careful history must be obtained and appropriate tests for hypersensitivity performed.*

Pre-exposure Immunization

The relatively low frequency of reactions to *DEV* has made it more practical to offer pre-exposure immunization to persons in high-risk groups; veterinarians, animal handlers, certain laboratory workers, and personnel stationed in areas of the world where rabies is a constant threat. Others whose vocational or avocational pursuits result in frequent exposures to dogs, cats, foxes, skunks, or bats should also be considered for pre-exposure prohylaxis.

Two 1.0 ml injections of *DEV* given subcutaneously in the deltoid area 1 month apart should be followed by a third dose 6 to 7 months after the second dose. This series of three injections can be expected to produce neutralizing antibody in 80 to 90 percent of vaccinees, 1 month after the third dose.

If more rapid immunization is desirable, three 1.0 ml injections of *DEV* may be given at weekly intervals with a fourth dose 3 months later. This schedule elicits an antibody response in about 80 percent of the vaccines.

All those receiving the pre-exposure vaccination should have their serum tested for neutralizing antibody 3 to 4 weeks after the last injection. Tests for rabies antibody can be arranged with or through state health department laboratories. If no antibody is detectable, booster doses should be given until a response is demonstrated. Persons with continuing exposure should receive 1.0 ml booster every 2 to 3 years.

---

*A useful guide for use of animal serum is included in the recommendation for tetanus prophylaxis in wound management prepared by the PHS Advisory Committee on Immunization Practices[2].

GUIDE FOR POST-EXPOSURE ANTIRABIES PROPHYLAXIS

The following recommendations are intended only as a guide. They may be modified according to knowledge of the species of biting animal and circumstances surrounding the biting incident.

Biting Animal		Treatment		
		Exposure		
Species	Status at Time of Attack	No Lesion	Mild*	Severe*
Dog or Cat	healthy	none	none[1]	S[1]
	signs suggestive of rabies	none	V[2]	S+V[2]
	escaped or unknown	none	V	S+V
	rabid	none	S+V	S+V
Skunk, Fox, Raccoon, Coyote, Bat	regard as rabid in unprovoked attack	none	S+V	S+V
Other	consider individually — see Rationale of Treatment in text			

Code: *—See definitions in text.

V—Rabies Vaccine

S—Antirabies Serum

1—Begin vaccine at first sign of rabies in biting dog or cat during holding period (preferably 7-10 days).

2—Discontinue vaccine if biting dog or cat is healthy 5 *days* after exposure, or if acceptable laboratory negativity has been demonstrated in animal killed at time of attack. If observed animal dies after 5 *days* and brain is positive, resume treatment.

When an immunized individual with previously demonstrated antibody is exposed to rabies, it is suggested that for a mild exposure, one booster dose of vaccine be given, and for a severe exposure, five daily doses of vaccine plus a booster dose 20 days later. If it is not known whether an exposed person had antibody, the complete post-exposure antirabies treatment should be given.

REFERENCES

1. Technical Report Series No. 321, *WHO* Expert Committee on Rabies, Fifth Report, 1966.
2. Recommendation of the Public Health Service Advisory Committee on Immunization Practices: Diphtheria, Tetanus, and Pertussis Vaccines — Tetanus Prophylaxis in Wound Management, *Morbidity and Mortality Weekly Report,* Vol. 15, No. 48, week ending December 3, 1966.

Checklist of Treatment for Animal Bites

(See Text for Details)

1. Flush Wound Immediately (First Aid).
2. Thorough Wound Cleansing Under Medical Supervision.
3. Antirabies Serum and/or Vaccine as Indicated.
4. Tetanus Prophylaxis and Antibacterial Treatment when Required.
5. No Sutures or Wound Closure Advised.

Delaware Academy of General Practice

SEMINAR SERIES IN GENERAL MEDICINE

The Delaware Academy of General Practice and the University of Pennsylvania School of Medicine, with assistance from Wyeth Laboratories and the Upjohn Company, announce a seminar series in General Medicine. The format will be strictly informal. It is anticipated that two speakers will provide variety and a chance for questioning in depth by those attending the session. There will be ten weekly sessions, in the fifth floor conference room of the Delaware Division of the Wilmington Medical Center from two to four p.m., starting Wednesday, September 13, 1967, and ending Wednesday, November 15, 1967. Approved for 20 Hours AAGP Credit.

PROGRAM

1. Sept. 13: *Peripheral Vascular Disease*

   Meyer Naide, M.D., Associate in Medicine, Director, Division of Peripheral Vascular Disease, Graduate Hospital, University of Pennsylvania.

   Stanley Baum, M.D., Associate Professor Radiology, University of Pennsylvania.

2. Sept. 20:

   The Program—William C. Spring, Jr., M.D., Program Coordinator, Greater Delaware Valley Regional Medical Program.

   Hormonal Therapy and the Menopause

   John J. Mikuta, M.D., Chairman, Department of Gynecologic Oncology, University of Pennsylvania.

3. Sept. 27: *Meningitis—Current Problems and Treatment*

   Lewis L. Coriell, M.D., Director of the Institute for Medical Research, Camden, New Jersey, and Professor of Pediatrics, University of Pennsylvania.

   Richard N. Harner, M.D., Assistant Professor of Neurology, Chief of Neurology, Graduate Hospital of the University of Pennsylvania.

4. Oct. 4: *New Developments in Antibiotics*

   Elwood L. Foltz, M.D., Assistant Professor of Medicine, U. of Pennsylvania.

   Donald L. Bornstein, M.D., Assistant Professor of Research Medicine, University of Pennsylvania.

5. Oct. 11: *Cardiogenic Shock*

   Domingo M. Aviado, M.D., Professor of Pharmacology, U. of Pennsylvania.

   Arthur E. Baue, M.D., Associate Professor of Surgery, Chief of Vascular Surgery, Graduate Hospital of the University of Pennsylvania.

6. Oct. 18: *Psychotherapeutic Drugs*

   George B. Koelle, M.D., Professor and Chairman, Department of Pharmacology, University of Pennsylvania.

   James H. Ewing, M.D., Associate Professor of Psychiatry, U. of Pennsylvania.

7. Oct. 25: *Thrombophlebitis and Thromboembolism*

   Moreye Nusbaum, M.D., Assistant Professor of Surgery, U. of Pennsylvania.

   Dick D. Harrell, M.D., Associate in Medicine, Director of the Division of Pulmonary Disease, Graduate Hospital of the University of Pennsylvania.

8. Nov. 1: *Glomerulonephritis*

   George D. Webster, M.D., Associate Professor of Medicine, Chief of Renal Disease Section, Graduate Hospital of the University of Pennsylvania.

   Arnold J. Rawson, M.D., Associate Professor of Surgical Pathology, University of Pennsylvania.

9. Nov. 8: *The Prostate*

   John J. Murphy, M.D., Professor of Urology, Chairman of the Division of Urology, Hospital of the U. of Pennsylvania.

   Horatio T. Enterline, M.D., Professor of Surgical Pathology, Chief of Surgical Pathology, Hospital of the University of Pennsylvania.

10. Nov. 15: *Coronary Artery Disease*

    Harry F. Zinsser, M.D., Clinical Professor of Medicine, Director of Cardiology, Graduate Hospital of the U. of Pennsylvania.

    William S. Blakemore, M.D., Professor and Chairman, Department of Surgery, Graduate Hospital of the University of Pennsylvania.

The Physician and The Pharmacist

A monthly feature of the Delaware Pharmaceutical Society

DRUG INFORMATION ABSTRACTS*

F.D.A. Censorship-Editorial

The author is criticizing the F.D.A. in its attempt, as he calls it, at censorship on physician prescribing habits. The F.D.A. has stated that publishers, authors and editors who have written, approved, and published drug dosages which deviate from those recommended by the F.D.A. are liable for damages to the patient and to the pharmaceutical manufacturer as well. The question is asked, can the F.D.A. assume the responsibility as the only published source of information on the use of drugs which is to be referred to by the practicing physician. The author insists that this is actually dangerous to medical progress and to the safe use of drugs.

In other words, this action will, in fact, do the opposite of what the F.D.A. is supposedly trying to do. The F.D.A. implies that there must be free and unrestricted opinion on durg usage. If any existing errors, F.D.A. included, are to be promptly recognized and rectified, the medical profession must be able to evaluate many views.

The author believes that, although with the best intentions, information from drug manufacturers approved by the F.D.A., and over the short period of time, is to be suspect. Where else can the physician turn? Where may the physician publicly disagree with the F.D.A. on matters of dosage? In conclusion he states, "In our opinion, it is in the worst interest of our nation's health, it is a barrier to education and it is for no one's welfare."

Clinical Pharmacology and Therapeutics
Walter Modell, Editor Editorial, May-June 1967.

Trial of Ascorbic Acid in Prevention of Colds

Ninety-one volunteers ranging in age from 18-50 years (mean 30.2) were given placebo and 3 grams of ascorbic acid daily for 3 days prior to challenge with nose drops containing small doses of known viruses in order to determine the efficacy of prophylactic ascorbic acid in prevention of colds.

It was concluded that ascorbic acid had no value in either the prevention or treatment of colds produced by 5 known viruses (M. rhinovirus and H. rhinovirus, a rhinovirus associated with influenza, virus type B, or one related to avian bronchitis). The number, duration and severity of the developing colds were identical in the treated and control groups.

Walker, Georginia H., Bynoe, M.L. and Tyrrell, D.A.J. *(Common Cold Research Unit, Salisbury, Wilts, England) Birt Med. J. 1:606 (Mar. 11)* 1967.

Aspirin Therapeutic Deaths

Aspirin causes more accidental deaths in young children than any other drug, and more importantly-something often forgotten-that in the pre-school child more aspirin deaths are caused by faulty therapeutics than by accident. At the Royal Hospital for Sick Children and at Stobhill Hospital, both in Glasgow, 79 proven and 26 probable cases of aspirin poisoning in children were admitted in the last two years. Of the 79 cases, 67 took aspirin accidentally and 12 were given aspirin for therapeutic reasons. Of the 67 patients in the accidental group, two died; in contrast, of the 12 in the therapeutic group, six died.

Salicylates have real therapeutic value only in rheumatic fever and rheumatoid arthritis. Tepid sponging is more effective in reducing fever, and there are safer sedatives. The surest way to eliminate therapeutic aspirin poisoning in infants and toddlers is to withhold the drug entirely. If the prescribing of aspirin is thought essential, the dose should be no more than 1 gr. (60 mg.) per year of age, five times a day, calculating this for younger children in terms of half-year fractions. The drugs should not be given to infants for more than two days, and the fluid intake must be kept liberal throughout.

---

*This is a monthly series of drug information abstracts gathered from current articles and prepared by the pharmacists with the purpose of alerting you on drugs and/or their complications.

Commentaries: *Clin. Pediat.* 6:197 (*Apr.*) 1967.

Comparative Blood Levels Of Hetacillin, Ampicillin and Penicillin G

This study compares serum concentration and renal excretion of Penicillin G. ampicillin and hetacillin in doses appropriate for meningitis and for enterococcal endocarditis.

Ampicillin in high doses is effective as single drug therapy for the 3 common forms of bacterial meningitis, for gram-negative septicemia and for some bacterial endocarditis.

To determine doses equivalent to roughly 20,000,000 units of Penicillin G daily, ampicillin and Penicillin G were administered by intravenous infusion at a rate of 0.5 gm. per hour for 3 hours and blood and urine specimens were collected at appropriate intervals for antibiotic assay. During the third hour, after the blood levels had become relatively constant, ampicillin levels were 81% higher on the average than the levels of Penicillin G (29 versus 16 ug/ml.) The renal clearance of Penicillin G was almost twice that of ampicillin, and 75% of both drugs was excreted in the urine, indicating that the renal mechanism was mainly responsible for the difference in blood levels.

Hetacillin, a new penicillin similar to ampicillin, gave even higher serum concentrations, and over 90% was excreted in the urine. These results indicate that 6 gm. of hetacillin per day, or 8 gm. of ampicillin, will produce blood levels equivalent to 12 gm. of Penicillin G (19,200,000 units) in the therapy of serious bacterial infections.

Tuano, S. B., Johnson, L. D., Brodie, J. L. and Kirby, H. J. (University of Washington School of Medicine, Seattle, Washington)
New Eng. J. Med. 275:635-639 (Sept. 22) 1966.

Anticoagulants-Multiple Drug Therapy

The anticoagulant response to coumarin-type anticoagulants may be modified by a variety of drugs. It has been previously noted that the administration of the pyrazolone derivatives, Butazolidin (phenylbutazone-Geigy) and Tandearil (oxyphenbutazone-Geigy) to patients being treated with coumarin anticoagulants can lead to serious hemorrhagic complications. Experiments conducted by the present authors indicate that Butazolidin potentiates the action of warfarin in vivo by displacing the anticoagulant from its binding to plasma albumin, making increased quantities of the drug available.

Aggeler et al. (San Francisco, Calif.), New England J.M. 276:496 (Mar. 2, 1967).

Lithium:
A Specific Against Manic Depressive Psychoses

Among the psychotropic drugs lithium (Li) is distinguished by a specific therapeutic action against mania and a unique prophylactic action against recurrent endogenous depressions and repeated manic-depressive episodes.

Overdosage of Li may lead to intoxications involving the central nervous system and the kidneys; but when it is given in moderate dosage under controlled conditions, the side effects are few and mild and the drug does not interfere with normal mental functions.

The considerable potential value of Li for research on manic-depressive psychosis is pointed out.

Schou, Magens (Neurochemische Forschungsabeeilung, Statshospitalet, Risskov, Denmark) *Arzneimittel-Forsch. 17:172 175 (Feb.) 1967.*

Oral Contraceptives
Can They Cause Thromboembolism?

British Medical Research Council: Based on three substantial and well controlled studies, the Council concludes that "*. . . there can be no reasonable doubt that some types of thrombolic disorder are associated with the use of oral contraceptives.*" Venous thrombosis and pulmonary embolism and infarction are conditions which seem most clearly associated with "the pill"; for coronary thrombosis, there is apparently no connection at all. Mortality data indicate that the risk of death may be in the order of 3 per 100,000 users per year. This should be weighed against the maternal mortality rate (for England and Wales) of 12 per 100,000 completed pregnancies.

Clin-alert No. 121, June 9, 1967. *British M. J. 2:355 (May 6), 1967.*

In Brief

Speakers On "Ask The Doctor"

Speakers for September, 1967, on the Tuesday Radio Program, (11:05 a.m., WDEL) produced by the Medical Society of Delaware are: Sept. 5, Edward F. Gliwa, M.D., *Immunizations;* Sept. 12, Davis G. Durham, M.D., *Cataracts;* Sept. 19, Stuart W. Rose, M.D., *Inguinal Hernia;* Sept. 26, Morton Keyser, M.D., *Hormonal Therapy.*

Personal Glimpses

Robert A. McGregor, M.D., has been elected Secretary of the Pennsylvania Society of Colon and Rectal Surgery to serve for the year 1967-68 . . . Nicholas Destounis, M.D., has been appointed Assistant Professor in Psychiatry, Albert Einstein College of Medicine, New York; Director of the Throggs Neck Mental Health Clinic and Consultant to the Bronx Municipal Medical Center. Dr. Destounis will maintain his private office in Wilmington . . .

The Month In Washington

A committee bill (H.R. 12080) approved by the House Ways and Means Committee included these changes in the present Social Security law:

- Allow medicare patients, or doctors, to collect from the government on the basis of an itemized bill. Present law requires a bill receipted as having been paid to the doctor if the doctor doesn't accept an assignment*.
- Authorizes states to allow physicians to bill medicaid patients directly if they are not also cash assistance recipients.*
- Eliminate the requirement for certification by a doctor before admission of a medicare patient to a hospital.*
- Shift coverage on medicare outpatient diagnostic services provided by hospitals from Plan A to Plan B.*
- Put limits on federal contributions to states for medicaid programs. Beginning July 1, 1968, the federal ceiling on eligibility would be 150% of the annual income set by a state for welfare eligibility. It would drop to 140% on January 1, 1969, and to 133-1/3%, January 1, 1970.
- Require states to give birth control information to welfare patients who request it.

*AMA Supported

In addition to opposing extension of medicare to disabled workers under age 65, the AMA opposed creation of a new Plan C under medicare and a provision for chiropractor's services—both of which were rejected by the committee.

The House group slashed back the President's proposal for a 15 per cent minimum monthly social security increase in cash benefits to 12.5 per cent. The administration proposal for an increase in social security taxes also was scaled down to 4.4%, on the employer and on the employee, of the first $7,600 in wages starting in 1968. The taxable wage base now is $6,600, and the tax rate is 4.4 per cent. The Administration had asked that the base be increased to $7,800 next year, and in later stages, to $10,800.

The AMA and the Kansas City (Mo.) Community Blood Bank asked Congress to exempt community blood banks from the anti-trust laws.

Fiske Fund Prize

The Trustees of the Fiske Fund of the Rhode Island Medical Society announce the following subject for the Prize Dissertation of 1967: “The Challenge of Obstetric Anesthesia.” Premium: $500.00. Regulations: To forward to the secretary of the Trustees on or before December 11, 1967, a copy of his dissertation with a motto thereon, and accompanying it, a sealed envelope bearing the same motto inscribed on the outside with his name and address within. The author transfers all his right, title and interest in and to the same, for the use, benefit, and advantage of the Fiske Fund, prior to receiving the premium award. Dissertations must be typewritten, double spaced on standard typewriter paper and should not exceed 10,000 words.

New President-Elect

Charles M. Moyer, M.D., has been appointed President-Elect of the Medical Society of Delaware—by unanimous election of the House of Delegates—to succeed J. Leland Fox, M.D., whose illness has necessitated his resignation. Members of the Society join in expressing their prayful hope for the recovery of Dr. Fox from his timely illness.

CLINICAL NOTICES AND MEETINGS

Otolaryngologic Assembly

The Annual Otolaryngologic Assembly of 1967 will be held October 14-20, 1967, in the new Illinois Eye and Ear Infirmary at the Medical Center, Chicago. A separate, but correlated course entitled, “*Head and Neck Radiology Conference,*” will be conducted by the Department of Radiology, for two days preceding the Assembly—October 12-13, 1967. For information, write: Department of Otolaryngology, P.O. Box 6998, Chicago, Ill., 60680.

American College Of Chest Physicians

The ACCP announces its 1967-68 Post graduate Program:

No. 1. *Cardiopulmonary Problems in Children,*
Holiday Inn, Chicago, Ill., Sept. 21-23, 1967.
No. 2. *Clinical Cardiopulmonary Physiology*
Knickerbocker Hotel, Chicago, Ill., Nov. 6-10, 1967.
No. 3. *Diagnosis and Treatment of Diseases of the Heart and Lungs*
Barbizon-Plaza, New York City, Nov. 13-17, 1967.

Subsequent courses will be published in a later issue.

Congress On Occupational Health

The 27th Congress on Occupational Health, sponsored by the AMA will be held Sept. 25-26, 1967, at the Regency Hyatt House, Atlanta, Georgia. The American Academy of General Practice has accepted the program for 11 elective hours of credit.

American Academy Of General Practice

The 19th Annual Scientific Assembly of the AAGP will be held September 18-21 in Dallas, Texas.

Research In Medical Education

The Association of American Medical Colleges will hold its 6th annual conference on research in medical education at the Hotel Hilton, New York, October 28-29, 1967.

Symposium

The Jefferson Medical College of Philadelphia presents a Symposium on Nov. 3-4, 1967, on *Genetics in Medical Practice.* The fee is $35.00 for practicing physicians. For further information, write: John H. Killough, M.D., Assistant Dean, Jefferson Medical College, 1025 Walnut Street, Phila., Pa.

Courses Announced

Postgraduate Courses

Temple University Health Sciences Center will hold two courses in *"Office Psychiatry and Psychosomatic Medicine."* Course 1, Basic Course; Course 2, Advance Seminar in Adult Psychiatry. These will start in the fall of 1967, held each Wednesday at the Health Sciences Center. The fee for Course 1 is $40; fee for Course 2 is $30. For further information, write: Barney M. Blind, Director, 230 W. Allens Lane, Philadelphia, Pa. 19119.

Nutrition And Metabolism

The 12th Annual Conference on Nutrition and Metabolism which is sponsored by the Committee on Nutrition and Metabolism of the Philadelphia County Medical Society, the Philadelphia Pediatric Society and the Council on Foods and Nutrition of the AMA will be held on Wednesday, October 18, 1967, at the Philadelphia County Medical Society, 2100 Spring Garden Street, Philadelphia, Pa., 19130. Write Dr. Charles R. Shuman for particulars.

Hypnosis

A graduate course in medical hypnosis will be offered to physicians and dentists by the University of Pennsylvania Graduate Division, School of Medicine. There will be 20 4-hour weekly sessions for a total of 80 hours beginning September 28, 1967. They will be given at the Institute of the Pennsylvania Hospital, 111 North 49th Street, Philadelphia, Pa., 19139. Write for information: Sidney E. Pulver, M.D., at the same address.

Hahnemann Courses

Postgraduate courses sponsored by the Hahnemann Medical College and Hospital, Philadelphia, are as follows:

General Internal Medicine, Oct. 4, 1967, through Mar. 27, 1968, every Wednesday—1-4 p.m., at the College.

A Current View of Congestive Heart Failure, Nov. 13-14, 1967, Sheraton Hotel.

Human Sexual Function and Dysfunction, Nov. 17-18, 1967, Marriott Motor Hotel.

Subsequent postgraduate schedules will be published later.

Scientific Heart Sessions

Six sessions in Clinical Cardiology will be given during the three-day meeting of the American Heart Association's 40th annual meeting, October 20-22, in San Francisco's Civic Auditorium. Forms to register, including hotel reservations, etc., may be obtained through your local heart association or by writing the AHA national office, 44 E. 23rd Street, New York, N.Y., 10010.

Arteriosclerosis Council

The American Heart Association's Council on Arteriosclerosis will be held Wednesday and Thursday, October 18-19, in San Francisco's Town House. This program immediately precedes the three-day Scientific Session. For further information, write: Alfred M. Bennett, M.D., AHA, 44 E. 23rd Street, New York, N.Y., 10010.

Heart Council Seminars

Four all-day postgraduate seminars will also precede the Heart Association's Scientific Session which will be held in San Francisco's Hilton Hotel on Thursday, October 19. The four titles for council courses are on: basic science, circulation, cardiovascular surgery, high blood pressure research, rheumatic fever and congenital heart disease.

Auxiliary Affairs

ANNUAL REPORT — NEW CASTLE COUNTY AUXILIARY — 1966-1967

During the past year, the New Castle County Auxiliary was privileged to hear most interesting and varied programs. Dr. John Levinson spoke on Vietnam, *The Other War,* in September. In November there was a visit to the Delaware Art Center to view the work of local artists. Dr. John Howie, Superintendent of the Alexis I. Dupont High School spoke on, *The School Behind the Iron Curtain,* in January. In March, Dr. William T. Reardon described how hypnosis is used in modern medical practice. In May, Dr. Jerome Kay brought our year's program to a conclusion with his presentation on the problems of teenagers.

Our standing committees were busy during the year. The AMAERF collected $698.00 from sympathy and appreciation contributions, the sale of Christmas cards, note paper and playing cards, and from the annual member assessment.

Our Community Service Screening Project for pre-school children was continued. During the year 2600 children were screened and more than 30 were referred for professional examination. In addition, the Auxiliary collected clothing and games for the Emily P. Bissell Hospital.

The Health Career and Recruitment Committee raised funds from our Fashion Show, Cookbook sales and luncheon income. These receipts together with $400.00 unexpended from 1966, totaled $1,594.72 to be assigned to the Nurses' Scholarship Fund. Recipients will be announced later when the committee members complete interviews with prospective candidates. The Hospitality Committee again undertook the preparation of most of the luncheons with success.

Our membership now stands at 264. Nine new members were welcomed during the year and invitations were issued to twenty six women physicians to become associate members. In September a group of Auxiliary members assisted the Mental Health Committee at the Farnhurst Fair. The left over gifts were used in *Operation Reindeer* at Christmas time. The Operation Hand Clasp Committee entertained the wives of the foreign interns and residents at a coffee in the fall and a trip to Winterthur this spring.

The Sewing Committee prepared 255 gowns and 104 blankets for the Visting Nurses with Mrs. Howard Anderson of Elkton doing the cutting and preliminary sewing and members doing the finished sewing.

The Ways and Means Committee presented a most successful fashion show in the Gold Ballroom of the Hotel DuPont on October 31, 1966. Fashions were from the Purple Door, with hair styling done by Central, makeup by Strawbridge and Clothier, and shoes from the Slipper. Mrs. Edward O'Donnell was commentator; doctor's wives and daughters served as models. Three paintings, from Mrs. C. R. Donoho, Dr. Norman Cannon, and Dr. James Metzger were chanced off and $1,062.25 was raised for the Scholarship Fund. The event was enjoyed by all. Our Cookbook Project with favorite recipes of Delaware Physicians and drawings by Mrs. Dene Walters was introduced and most enthusiastically received.

The Auxiliary at the request of our local physicians was asked to sponsor a talk in Wilmington by Dr. Jim Turpin, head of Project Concern, a medical relief organization in Southeast Asia. He spoke in Wilmington on February 13, 1967. Tickets were donated by the Cedar Tree Press and distributed by Auxiliary members. The proceeds from this enlightening talk, $513.00, was given to Dr. Turpin to further his project.

At the State Auxiliary Meeting at the Talley-Ho Restaurant on October 1, 1966, the Newcastle County Auxiliary was represented by twenty seven delegates.

With all these projects, it is obvious that we are a service-orientated organization. It is in this type of service to the community, as doctors' wives, that we feel we have have demonstrated our biggest and most needed contributions.

Betty Papastavros, *President*

MEDICAL SOCIETY OF DELAWARE

1776 - 1789 - 1967

178th ANNUAL MEETING

October 27 and 28, 1967

PROGRAM

HOUSE OF DELEGATES

OCTOBER 27

Delaware Academy of Medicine, 1925 Lovering Avenue, Wilmington, Delaware

8:00 P.M. House of Delegates
10:30 P.M. Reception for Delegates

SCIENTIFIC SESSION

OCTOBER 28

Delaware Academy of Medicine, 1925 Lovering Avenue, Wilmington, Delaware

8:30 REGISTRATION — EXHIBITS

9:00 Call to Order — H. Thomas McGuire, M.D., President, Medical Society of Delaware
Welcoming Remarks — R. Douglas Sanders, M.D., President, New Castle County Medical Society
The Honorable Charles L. Terry, Governor of the State of Delaware
Report of House of Delegates — Joseph W. Abbiss, M.D., Secretary, Medical Society of Delaware

9:15 THE WASHINGTON SCENE — AS VIEWED BY THE PHARMACEUTICAL INDUSTRY — C. Joseph Stetler, Esquire, President, Pharmaceutical Manufacturers Association, Washington, D.C.

9:55 MEDICINE AND GOVERNMENT — PROBLEMS, PROGRESS, PROGNOSIS — Philip R. Lee, M.D., Assistant Secretary for Health and Scientific Affairs, Department of Health Education and Welfare, Washington, D. C.

10:35 INTERMISSION — EXHIBITS

11:00 LIFETIME STUDY OF MEDICINE — William A. Sodeman, M.D., Professor Emeritus and Dean Emeritus at Jefferson Medical College; Scientific Director, Life Insurance Medical Research Fund, Rosemont, Pennsylvania

11:40 PRESIDENT'S ADDRESS — H. Thomas McGuire, M.D.
Business Meeting
Election of President-elect

12:35 LUNCH — Host, New Castle County Medical Society

2:00 ALCOHOLISM: THE ROLE OF THE PRACTICING PHYSICIAN — Stanley E. Gitlow, M.D., Associate Clinical Professor of Medicine, New York Medical College, New York

2:40 INTERMISSION — EXHIBITS

3:00 THE DOCTOR'S WIFE — Howard P. Rome, M.D., Director, Department of Psychiatry and Neurology, Mayo Clinic, Rochester, Minnesota

3:40 ADJOURNMENT

Note: The Delaware Diabetes Association will meet immediately following adjournment.

The Medical Society of Delaware gratefully acknowledges the assistance of the following in the presentation of the scientific session.

Wilmington Council on Alcoholism
A. H. Robins
Schering Laboratories
Wyeth Laboratories
Eli Lilly and Company
Roche Laboratories
Merick Sharp & Dohme
Ciba Pharmaceutical Company

Wilmington Country Club, Kennett Pike, Wilmington

6:30 Reception and Cocktails

7:30 Annual Banquet

Invocation — The Reverend Thomas H. Carlin, OSFS, Professor of Philosophy, Allentown College of St. Francis de Sales, Center Valley, Pennsylvania
Speaker — Dana L. Farnsworth, M.D., Director, University Health Services and Henry K. Oliver Professor of Hygiene, Harvard University — "Emotional Crises of Youth"
Dancing 'til 12:30 A.M. — Paul Wilkinson's Orchestra

6 Hours AAGP Credit Applied For

PROGRAM OF THE THIRTY-EIGHTH ANNUAL MEETING

THE WOMAN'S AUXILIARY TO THE MEDICAL SOCIETY OF DELAWARE

SATURDAY, OCTOBER 28, 1967

Wilmington Country Club, Kennett Pike

10:00 A.M. Registration and Coffee Hour

10:30 A.M. General Session

Call to Order — Mrs. John W. Howard
Pledge of Loyalty
Address of Welcome —
  Mrs. Haynes B. Cates
Introduction of Guests
Memorial Service
Roll Call of Delegates — Mrs. Howard Wilk
Treasurer's Report —
  Mrs. Edward O'Donnell
Reports of County Auxiliaries
  Kent — Mrs. William Leitzinger
  New Castle — Mrs. Haynes B. Cates
  Sussex — Mrs. Joseph Elliott
National Convention — 1967
  Delegate's Report—Mrs. Harold Laggner
Report of Priority Committees
Report of the President —
  Mrs. John W. Howard
Report of the Nominating Committee —
  Mrs. John W. Barnhart
Election and Installation of Officers
Address
  Mrs. Robert F. Beckley, Eastern Regional
  Vice-President, Woman's Auxiliary to the
  American Medical Association

12:30 P.M. Luncheon

Invocation
Introduction of the Advisory Committee
Greetings from the Medical Society
  of Delaware
  H. Thomas McGuire, M.D., President
Presentation of Past President's Pin
Presentation of Gavel and President's Pin
Inaugural Address — Mrs. Harold Laggner
Adjournment

PLEDGE OF LOYALTY

I pledge my loyalty and devotion to the Woman's Auxiliary to the American Medical Association, I will support its activities, protect its reputation, and ever sustain its high ideals."

EXHIBITORS

BOOTH

No. 1—Smith Kline & French Laboratories

Representatives will be on hand to answer your specific questions and provide information on their products and services.

No. 2—Blue Cross & Blue Shield of Delaware, Inc.

Blue Cross and Blue Shield of Delaware, Inc., will have their display in Booth #2. Mr. Leonard Davis, Assistant Managing Director, and his assistant will represent the Plan and answer any questions.

No. 3—DELPAC

The Delpac exhibit is designed to inform the physicians of the aims and functions of the Committee. It will be manned by members of the Executive Committee and Board of Directors. We invite all State Society members to stop by for a first-hand report on the AMPAC national work-shop and the on-going plans for the campaign of 1968.

No. 4—Apache Corporation

It is Apache's function to organize, offer, and manage oil and gas exploration programs for individuals whose circumstances create a need for tax savings and deferred income.

No. 5—Secretel, Inc.

Secretel, Inc. offers the modern doctor the perfect answering service electronically operated with the emergency call capability. See a demonstration for error free performance operating 24 hours a day, 7 days a week. You may also see Pocket Doctor in action, an electronic device for all your cardiac, aged, or invalid patients.

No. 6—Thomas A. Edison Industries — Voicewriter Division

Televoice phone network dictating systems for accurate, complete medical records; executive Voicewriter models; Escort — portable battery-operated dictating machine; Envoy and Fi-Cord Model 300 — economical magnetic recorders.

No. 7—Mead Johnson & Company

The Mead Johnson Laboratories' exhibit has been arranged to give you the optimum in quick service and product information. To make your visit productive, specially trained representatives will be on duty to tell you about their products.

No. 8—G. D. Searle & Company

You are cordially invited to visit the Searle booth where our representatives will be happy to answer any questions regarding Searle Products of Research. Featured will be Ovulen for ovulation control and menstrual disturbances, and Flagyl, a potent, new trichomonacidal agent for trichomonal vaginitis, cervicitis, urethritis and prostatitis.

No. 9—Parke, Davis & Company

Medical service members of our staff are in attendance at our booth to discuss important Parke-Davis specialties which will be on display.

BOOTH

No. 10—Mallinckrodt Pharmaceuticals

The products to be displayed are COVANAMINE*, PYRALDINE*, LUFTODIL*, and LUFYLLIN*.
*Reg. U.S. Pat Off.

Nos. 11, 12—E. I. du Pont de Nemours & Company

"Symmetrel" (amantadine HCl) is a new synthetic chemical unrelated to any other chemotherapeutic agent. It is the first and only oral medication for the prevention of respiratory infections caused by influenza A_2 (Asian) viruses tested to date. It is not a vaccine or antibiotic.

No. 13—Merck Sharp & Dohme

The Merck Sharp & Dohme exhibit has been designed to supplement the physician's therapeutic armamentarium. Technically trained personnel are present to discuss the scope and variety of services offered.

No. 14—Wallace Pharmaceuticals

The three panels mounted in the Wallace Pharmaceuticals' exhibit illustrate some of the research being done by this company, under the leadership of Dr. Berger. Dr. Berger was discoverer of Miltown, the first tranquilizer introduced into this country. Through the years Miltown has enjoyed a high safety-efficacy ratio; including twelve years of proven efficacy, over 80,000,000 prescriptions, and over 1800 clinical papers.

No. 15—Roche Laboratories

Continuing Roche research has produced outstanding contributions to medicine since 1909. The personnel at the exhibit welcome your comments, questions or suggestions about our products and services.

No. 16—Sandoz Pharmaceuticals

Sandoz Pharmaceuticals cordially invites you to visit our display where we are featuring Mellaril, Sansert, Cafergot P-B, Fiorinal and Fiorinal with codeine. Any of our representatives in attendance will gladly answer questions about these and other Sandoz products.

No. 17—Lewis E. Neubauer, Nicholas Reilly

Scientific Publications

No. 18—

No. 19—

No. 20—The Delaware State Board of Health

The Delaware State Board of Health presents an exhibit produced by the Immunization Activities Program, consisting of an explanation of the various operations of a new "Infant Maintenance Program". Of particular significance will be the important part parents of newborn infants and private physicians can play in the success of this program.

No. 21—Pro Services, Inc.

PRO has been endorsed by the Medical Society of Delaware to administer its Internal Revenue-approved "Trusted" Keogh Retiremnt Plan. Investments under the Society plan are guided by Calvin Bullock Ltd., PRO's investment planning associate. PRO specialists will help member physicians obtain their Keogh tax shelter and income tax benefits under the Society program.

No. 22—Bristol Laboratories

No. 23—Bertholon-Rowland, Inc.

Bertholon-Rowland Agencies have been administrators of the Medical Society of Delaware Accident and Health Plan since 1953. In keeping with the needs of the members and the changes in protection available in the industry many improvements have been made in the plan. Personal counseling is part of the Bertholon-Rowland Agencies' service upon request.

No. 24—Smith, Miller & Patch, Inc.

Smith, Miller & Patch, Inc. will appreciate an opportunity to discuss with you our recently enlarged line of hematinic tablets including Vitron, Vitron-C, and Vitron-C Plus; and many of our ophthalmic products for ocular conditions encountered in general practice.

No. 25—Mutual Benefit Life Insurance Co.

Walter B. Suskind, Agency of the Mutual Benefit Life presents "Financial Planning for the Physician". Check with our representative for matters on tax savings, money management, insurance, estate planning. Mutual Benefit Life has been appointed by the AMA as one of four administrators for their reitrement plan for physicians.

No. 26—Libby Surgical Supply Company

No. 27—Delaware League For Planned Parenthood, Inc.

The Delaware League for Planned Parenthood will emphasize its recent intensive effort to provide medically directed birth control services and education to low income Wilmington neighborhoods. Other clinical services, new programs and educational projects will be presented. Your questions and suggestions will be welcomed by a representative and literature will be available.

No. 28—Cappeau Drug Stores

Members of the Medical Society of Delaware are cordially invited to visit Cappeau's exhibit.

No. 29—J. A. Montgomery, Inc.

J. A. Montgomery, Inc. will be very glad to welcome members of the Medical Society of Delaware to their exhibit.

No. 30—Wilmington Council on Alcoholism, Inc.

The Wilmington Council on Alcoholism, Inc. exhibit has been arranged to show the steps to alcohol addiction and the steps to recovery. Each doctor in attendance will receive a kit on Alcoholism. Literature is available for alcoholics, spouses of alcoholics, and employers of alcoholics.

No. 31—Lakeside Laboratories, Inc.

Our exhibit features the theme "early recognition and rapid improvement of depression" and shows how to save valuable case history-taking time by way of an easy-to-use depression rating scale and Lakeside's rapid-acting antidepressant, Norpramin.

No. 32—John G. Merkel & Sons, Inc.

See the latest and finest in Medical and Laboratory equipment for hospital or office and the latest equipment for the home care of your patient. This equipment available upon request.

No. 33—The Coca-Cola Company

Ice cold Coca Cola served through the courtesy and cooperation of the Delaware Coca-Cola Bottling Company, and The Coca-Cola Company.

No. 34—Wyeth Laboratories

Wyeth Laboratories is featuring the wide spectrum penicillin, Omnipen, and the popular ataractic agent Serax. Also featured are the Unit Dose systems, Tubex and Redipak. Representatives Bob Dulick, Ben Hetzel and Dave Swingle are looking forward to greeting you at the Wyeth booth.

No. 35—William P. Poythress & Company

The Poythress exhibit will feature Trocinate, a unique direct-acting (musculotropic) antispasmodic drug, and the Mudrane combinations, established Poythress products for relief of bronnchial asthma. Solfoton Solfo-Serpine, Panalgesic, and Synirin will also be featured. Your requests for literature and professional trial quantities are cordially invited.

No. 36—Schering Corporation

Schering Corporation invites you to visit their exhibit where their representatives will be available to discuss with you any questions you may have on ETRAFON (R), AFRIN (R), GARAMYCIN (R), CELESTONE (R), SOLUSPAN (R) Injection, TINACTIN (R) or any other Schering product.

GENERAL INFORMATION

Time and Place

The House of Delegates will meet at 8:00 P.M., Friday, October 27, at the Delaware Academy of Medicine. Following the business session there will be a buffet for Delegates. The Scientific Session will be held Saturday, October 28 at the Delaware Academy of Medicine, 1925 Lovering Avenue, Wilmington at 8:30 A.M. The Woman's Auxiliary will meet at 10:00 A.M., Saturday, October 28 at the Wilmington Country Club. The annual dinner-dance will be held at 6:30 P.M., Saturday, October 28 at the Wilmington Country Club.

Registration

The registration desk will open at 8:30 A.M. on October 28 at the Delaware Academy of Medicine. Coffee will be served by the New Castle County Chapter of the Delaware Association of Medical Assistants during the registration period. Admission to all sessions will be by badge secured at the registration desk.

OFFICERS AND COMMITTEES 1966-1967

President, H. Thomas McGuire, M.D.
Vice-President, Emerson Y. Gledhill, M.D.
President-Elect, Charles M. Moyer, M.D.
Secretary, Joseph W. Abbiss, M.D.
Treasurer, Lawrence Katzenstein, M.D.
American Medical Association — Delegate, H. Thomas McGuire, M.D. — Alternate Delegate, William O. LaMotte, Jr., M.D.
Delaware Academy of Medicine — Representative, Norman L. Cannon, M.D.
Blue Cross-Blue Shield, Inc. Trustees: Conley L. Edwards, M.D., William Cooper, M.D., Norman Jones, M.D., H. Thomas McGuire, M.D., Karl S. Russell, M.D., Allen H. Seeger, .MD.

STANDING COMMITTEES

Budget

*Lawrence Katzenstein, M.D.
Charles Allen, M.D.
Alfred E. Bacon, Jr., M.D.
James Beebe, Jr., M.D.
Charles Walker, Jr., M.D.

Program

*Robert L. Meckelnburg, M.D.
*H. Thomas McGuire, M.D.
Otakar J. Pollak, M.D.
Richard W. Tobin, M.D.
Arthur F. Zimmerman, M.D.

Publications

*Robert B. Flinn, M.D.
Joseph W. Abbiss, M.D.
Davis G. Durham, M.D.

Public Laws

*William O. LaMotte, Jr., M.D.
Rhoslyn J. Bishoff, M.D.
Christopher R. Donoho, M.D.
James E. Marvil, M.D.
William J. Vandervort, M.D.
Arthur F. Zimmerman, M.D.
Allston J. Morris, M.D.

SPECIAL COMMITTEES

Maternal Mortality

*John M. Levinson, M.D.
Charles L. Miller, M.D.
A. M. Devenis, M.D.
William A. Leitzinger, M.D.
Winfried L. Mroz, M.D.
John C. Rawlins, M.D.

Medical Economics

*Davis G. Durham, M.D.
J. Robert Fox, M.D.
C. E. Graybeal, M.D.
Pierre L. LeRoy, M.D.
Ignatius J. Tikellis, M.D.

Medical Scholarships

*Gordon Keppel, M.D.
Sveinbjorn Bjornson, M.D.
Edward S. Dennis, M.D.
Charles M. Moyer, M.D.
Oliver A. James, M.D.

Medical School for Delaware

*James E. Marvil, M.D.
*Anthony C. D'Alonzo, M.D.
James Beebe, Jr., M.D.
Leonard P. Lang, M.D.
Charles Levy, M.D.
James T. Metzger, M.D.
Willard F. Preston, M.D.
Frank T. O'Brien, M.D.
Otakar J. Pollak, M.D.
Daniel J. Preston, M.D.
Howard Wilk, M.D.

Medical Service and Public Relations

*David A. Levitsky, M.D.
Alfred E. Bacon, Jr., M.D.
John W. Alden, Jr., M.D.
W. Phillip Portz, M.D.
Arthur F. Zimmerman, M.D.

Medical Review Committee

*R. Douglas Sanders, M.D.
Herbert M. Baganz, M.D.
Howard Wilk, M.D.
Harold S. Rafal, M.D.
Alfred E. Bacon, Jr., M.D.
Edgar R. Miller, Jr., M.D.
Leslie W. Whitney, M.D.
Robert W. Frelick, M.D.
Elton Resnick, M.D.
William B. Cooper, M.D.
Norman Jones, M.D.
Karl S. Russell, M.D.
Allen H. Seeger, M.D.
Conley L. Edwards, M.D.
H. Thomas McGuire, M.D.

Medicare Adjudication

*Sidney Stat, M.D.
Benjamin F. Burton, M.D.
Edward S. Dennis, M.D.
William R. Hazzard, M.D.
Oliver A. James, M.D.
Walter W. Moore, M.D.
Richard Raiber, M.D.

Medico Legal Affairs

*James T. Metzger, M.D.
Kurt Anstreicher, M.D.
S. Ward Casscells, M.D.
Leslie M. Dobson, M.D.
Martin Gibbs, M.D.
Robert M. Marine, M.D.
James R. McNinch, M.D.
Gerald J. Savage, M.D.
Pierre L. LeRoy, M.D.

Prepayment

*Lemuel C. McGee, M.D.
*R. Douglas Sanders, M.D.
Joseph W. Abbiss, M.D.
Olin S. Allen, II, M.D.
Joseph A. Arminio, M.D.
Conley L. Edwards, M.D.
John W. Barnhart, M.D.
Joseph E. Belgrade, M.D.
H. Thomas McGuire, M.D.
William B. Cooper, M.D.
Robert W. Frelick, M.D.
Richard C. Hayden, M.D.
Norman P. Jones, M.D.
William O. LaMotte, Jr., M.D.
John W. Maroney, M.D.
Elton Resnick, M.D.
Karl S. Russell, M.D.
Allen H. Seeger, M.D.
Harold S. Rafal, M.D.
Howard Wilk, M.D.

Religion and Medicine

*Thomas H. Hogshead, M.D.
John B. Baker, M.D.
Sarah Bishop, M.D.
Robert L. Dewees, M.D.
James J. Gallagher, M.D.
Richard H. Weiss, M.D.
Dewey Nelson, M.D.

School Health

*Edward F. Gliwa, M.D.
Sarah Bishop, M.D.
Robert W. Frelick, M.D.
Rhoslyn J. Bishoff, M.D.
Harry G. Neese, M.D.
John C. Rawlins, M.D.
William D. Shellenberger, M.D.

Utilization of Facilities

*William D. Shellenberger, M.D.
Pierre L. LeRoy, M.D.
Edgar R. Miller, Jr., M.D.

Veneral Disease

*Donald Schetman, M.D.
Winder L. Porter
Casimir Vileisis, M.D.
Raphael A. Zaragosa, M.D.

Aging

*Allston J. Morris, M.D.
John W. Barnhart, M.D.
Felix Mick, M.D.
Verna Stevens-Young, M.D.
Charles Strahan, M.D.
Henry V'P Wilson, M.D.

AMA-ERF

*Gustave K. Berger, M.D.
Joseph A. Elliott, M.D.
Robert B. Flinn, M.D.
Joseph F. Hughes, M.D.

Education

*William H. Duncan, M.D.
Jason L. Campbell, M.D.
John A. J. Forest, Jr., M.D.
G. Barrett Heckler, M.D.
Robert C. Kingsbury, M.D.
David Platt, M.D.
Rubin A. Teixido, M.D.

Grievance Board

*Williard F. Preston, M.D.
John B. Baker, M.D.
Albert Gelb, M.D.
Sylvester W. Rennie, M.D.

Advisory, Woman's Auxiliary

John W. Howard, M.D.
Harold J. Laggner, M.D.
Edward T. O'Donnell, M.D.
John M. Levinson, M.D.
Ignatius J. Tikellis, M.D.

Mental Health, Alcoholism, and Drug Dependence

*Herman J. Bennett, M.D.
I. Lewis Chipman, M.D.
Richard Kester, M.D.
H. Thomas McGuire, M.D.
William J. Vandervort, M.D.

Liaison with Delaware Chapter, American Cancer Society — Oscar N. Stern, M.D.
Liaison with Delaware Chapter, American Heart Association — Lemuel C. McGee, M.D.
Liaison with Delaware Chapter, American Diabetes Association — Herbert M. Baganz, M.D.
Liaison with Delaware Tuberculosis and Health Society — Gerald A. Beatty, M.D.
Liaison with Mental Health Association of Delaware — Herman J. Bennett, M.D.
Liaison with Child Diagnostic and Development Center — Henry Stroud, M.D.
Liaison with Vocational Rehabilitation Commission — S. Ward Casscells, M.D.

WOMAN'S AUXILIARY TO THE MEDICAL SOCIETY OF DELAWARE

Mrs. John W. Howard, *President*
Mrs. Harold J. Laggner, *President-Elect*
Mrs. Edward T. O'Donnell, *Treasurer*
Mrs. John M. Levinson, *Corresponding Secretary*
Mrs. Ignatius J. Tikellis, *Recording Secretary*

NEW CASTLE COUNTY MEDICAL SOCIETY

R. Douglas Sanders, M.D., *President*
John W. Alden, Jr., M.D., *Pres.-Elect*
Robert L. Dewees, M.D., *Vice-President*
Marvin H. Dorph, M.D., *Secretary*
Alfred E. Bacon, Jr., M.D., *Treasurer*

Councilors: Chester R. Dietz, M.D., Frank T. O'Brien, M.D., Conley L. Edwards, M.D., Harry Taylor, M.D.

Delegates (1966-67): Leon V. Anderson, M.D., Patrick F. Ashley, M.D., Stephen W. Bartoshesky, M.D., Gustave K. Berger, M.D., William H. Duncan, M.D., Williford Eppes, M.D., William T. Hall, M.D., Lloyd B. Harrison, Jr., M.D., George L. Henderson, M.D., Catherine P. Johnson, M.D., Leroy R. Kimble, M.D., Gordon Keppel, M.D., William O. LaMotte, Jr., M.D., Alfred Lazarus, M.D., Samuel W. Lippincott, M.D., Edgar R. Miller, Jr., M.D., Stuart W. Rose, M.D., R. Douglas Sanders, M.D., Richard Weiss, M.D.

Alternates (1966-67): Olin S. Allen, II, M.D., Marvin V. Andersen, M.D., Alfred E. Bacon, Jr., M.D., Edward F. Becker, M.D., Joseph E. Belgrade, M.D., Robert S. Brennan, M.D., Thomas R. Brooks, M.D., Haynes B. Cates, M.D., I. Lewis Chipman, Jr., M.D., H. George DeCherney, M.D., Davis G. Durham, M.D., George N. Ericksen, M.D., Robert W. Frelick, M.D., Park Huntington, M.D., Warren R. Johnson, M.D., Allston J. Morris, M.D., Christos Papastavros, M.D., Robert E. Price, Jr., M.D., William J. Vandervort, M.D.

Delegates (1967-68): John W. Alden, Jr., M.D., Joseph A. Arminio, M.D., Herbert M. Baganz, M.D., John W. Barnhart, M.D., Edward M. Bohan, M.D., Italo Charamella, M.D., A. Henry Clagett, Jr., M.D., C. Anthony D'Alonzo, M.D., Joseph J. Davolos, M.D., Robert L. Dewees, M.D., Marvin H. Dorph, M.D., Edward F. Gliwa, M.D., Maurice Goleburn, M.D., G. Barrett Heckler, M.D., Robert D. Hunt, M.D., Leonard P. Lang, M.D., Douglas W. MacKelcan, M.D., Edward S. Parvis, M.D., Winder L. Porter, M.D., William D. Shellenberger, M.D.

Alternate (1967): Howard Wilk, M.D. (For expired term of Doctor Dietz)

Alternates (1967-68) Herman J. Bennett, M.D., Donald C. Cameron, M.D., I. Favel Chavin, M.D., Howard D. Cohen, M.D., Christopher R. Donoho, M.D., James F. Flanders, M.D., Carl I. Glassman, M.D., Joseph A. Glick, M.D., Gerhard E. Hartenauer, M.D., Pierre L. LeRoy, M.D., Daniel Lieberman, M.D., Robert L. Meckelnburg, M.D., Edwin A. Mekanik, M.D., McHenry Peters, M.D., Charles L. Reese, Jr., M.D., Charles S. Riegel, M.D., Donald Schetman, M.D., Charles W. Wagner, M.D., Dene T. Walters, M.D., Robert L. Wuertz, M.D.

Woman's Auxiliary
Mrs. Christos Papastavros, *President*

KENT COUNTY MEDICAL SOCIETY

Charles Allen, M.D., *President*
Richardson B. Glidden, M.D., *Vice-P.*
Winfried L. Mroz, M.D., *Sec.-Treas.*

Delegates: Norman P. Jones, M.D. - 1967, William C. Pritchard, Jr., M.D. - 1967, John A. J. Forest, Jr., M.D. - 1968, Rhoslyn J. Bishoff, M.D. - 1968.

Alternate Delegates: James M. Chase, Jr., M.D. - 1967, Arthur F. Zimmerman, M.D. - 1967, John J. Lazzeri, M.D. - 1968, E. Harold Mercer, M.D. - 1968.

Councilors: Edward S. Dennis, M.D., James R. McNinch, M.D.

Woman's Auxiliary
Mrs. William Leitzinger, *President*

SUSSEX COUNTY MEDICAL SOCIETY

Joseph A. Eliott, M.D., *President*
Daniel Alvarez, M.D., *Vice-President*
A. M. Devenis, M.D., *Secretary-Treas.*

Councilors: James E. Marvil, M.D., Robert Lewis, M.D.

Delegates: David Sills, M.D., Joseph Elliott, M.D., William Cooper, M.D., J. Leland Fox, M.D., W. Pierce Ellis, M.D., Laurence Fitchett, M.D.

Alternate Delegates: Harold Wilberg, M.D., Robert Kingsbury, M.D., Casimir Vileisis, M.D., Arthur Tormet, M.D., Carl Pierce, M.D., C. E. Graybeal, M.D.

Woman's Auxiliary
Mrs. Joseph Elliott

H. THOMAS McGUIRE, M.D.
President, Medical Society of Delaware, 1966-1967

Delaware Medical Journal

SEPTEMBER, 1967
VOLUME 39
NUMBER 9

Editorial...

AN ANSWER TO OBESITY

It is well known that obese persons move about less than thin persons. Actual pedometer readings have documented that the obese individual is relatively sedentary. In spite of the arguments that some overweight persons actually "eat like a bird," metabolic balance studies consistently show that such patients lose weight on restricted diets if hospitalized, and regain as outpatients.

Calories do count, and if a person takes in more than the body burns, they will gain weight, and vice versa. Careful metabolic studies have failed to reveal any metabolic evidence to support the oft-quoted statement that the obese individual has a more efficient system for the conservation of energy than the thin. There appears to be no thyroid abnormality or other endocrine cause for most obesity, and all of the evidence supports the conclusion that it is a simple matter of calories taken in—versus—calories burnt.

Obese persons have high blood insulin levels. The reason for elevated blood insulin levels remains unexplained. However, when obese patients with high insulin levels are fasted, and their weights returned to normal, the blood insulin also returns to normal. This would seem to show that insulin levels are secondary rather than primary to obesity.

Impressive environmental studies of large numbers of adopted children indicate that a child born of thin parents, who is adopted into a home of parents where obesity is common, will frequently become obese. On the other hand, children of obese parents, when adopted into a home of thin step-parents where food is less of an environmenal influence, will remain thin.

Turning to the laboratory animal, Dr. Lester Salans has brought a new dimension into our thinking. Dr. Salans was able to show that force-fed rats became obese, while their under-fed litter mates remained thin. Biopsy of the adipose tissue of obese rats showed a greatly increased number of adipose cells. The under-fed siblings had a much smaller number of adipose cells. Furthermore, once the animals reached adulthood, the number of adipose cells became fixed, and changes in eating habits would no longer increase or decrease the fat cell population.

Similar studies on humans have shown that the adipose tissue of obese individuals is characterized primarily by marked increase in the number of adipose cells. To a lesser extent, there is an increase in the cell size. The same patients, after weight reduction, continue to have the same high cell number, but have a reduced adipose cell size. It seems clear then, that the obese individual has a hypercellular adipose tissue when compared with the normal thin individual. It also seems highly suggestive that future studies will show that the adipose tissue cell number is set some time during childhood, as had been found in the studies on rats.

Thus we return to eating habits of children and the influence of environment as perhaps the most reliable cause of obesity. If the change in adipose cell count in children follows that of the rodent, we may have part of the answer to obesity.

EDUCATION HAS VITAL ROLE IN CORRECTING MISCONCEPTIONS ABOUT VENEREAL DISEASES

• **Extensive dissemination of information is necessary to close wide gaps in knowledge of the venereal diseases and to correct many fallacies and misconceptions.**

Winder L. Porter, M.D.
John W. Gray

When we recognize the prevalence of mistaken notions about venereal disease, we cannot fail to appreciate the great necessity that the facts be portrayed more accurately. Amidst agitation for increased venereal disease education, a significant segment of the population expresses satisfaction with what is now being done. Many feel themselves entirely competent to handle this subject within their own family unit, but certainly many are missing the boat if we can judge by a panorama of individuals observed as part of the venereal disease caseload whether definitely infected or merely incidentally encountered because of possibility of venereal disease for any number of different reasons.

A ten year old boy with genital discharge was treated by a private physician. The mother was convinced that somehow he had picked up something while swimming in a pond and did not even consider that he had experienced sexual relations, or that this was manifestation of gonorrhea.

The mother of a six year old girl with gonorrhea blamed a neighbor child for infecting her daughter. There was no evidence that the children ever had intimate contact because the two families did not get along well together, and there was no evidence that the neighbor girl was diseased. When her confidence was gained, the little patient named two other youngsters with whom she had sexual activity of a sort and one of these was proven responsible for infecting her.

Another mother with two little girls both infected with gonorrhea insisted that they must have been infected by a neighbor who cared for them at times. They never slept at this home and admitted nothing indicative of any kind of sex play. However, it was found that both did sleep with their mother on occasion and that that it was she who had been responsible for infecting her own children.

Gonorrhea was found in still another little girl whose mother was free to admit she had no idea what was taking place. In this instance, the child was able graphically to describe tampering on the part of the mother's paramour. It is notable that many of these children had innocent childish conceptions of sex activity and some were completely unaware of emotional reaction or that they embodied unacceptable conduct. To them it was just like any other game they played and several asked why they could not continue to play with the same children they had played with before they became sick.

A group of boys in their early teens was found to be having regular homosexual relations. While some were introduced to the practice by older males and some had relations with females, others were not acquainted with the connotation of homosexuality or even with slang expressions for this type of activity, and also did not realize there was anything irregular about this behavior.

A serviceman with gonorrhea reported several homosexual contacts. He had been

---

Dr. Porter, M.P.H., is Director, Venereal Disease Control; Mr. Gray is Venereal Disease Epidemiologist, Delaware Board of Health.

introduced to the practice at an early age and also was unaware that it was unacceptable until he entered a seminary for religious study and was promptly dismissed when this came to light. He enlisted in the service to prove his masculinity but gradually drifted back into homosexual relations which were exposed when he sought treatment for venereal disease.

A pregnant woman with infectious syphilis insisted that she had no sexual contacts besides her husband. She referred to him as a cured homosexual although she was free to admit that he embraced, kissed and was otherwise affectionate towards other men in her presence. She expressed no sense of impropriety or abnormality in his behavior; the husband and at least four of his male intimates were found to harbor infectious syphilis spread homosexually.

A sixteen year old girl was investigated as a contact of an infectious syphilis patient. She came from an upper middle class family headed by an executive with extensive professional training. She exhibited actual contempt for her parents and acted as though she were trying to get even with them for failure to establish any rapport with her, to provide anything in the way of sex information or guidance, or to impose any restrictions upon her. Although no infection was found, she was counseled as to the inherent dangers of her sexual behavior. Several months later she returned for examination now motivated by a fear that she might have contracted something which might render her sterile. She justified her multiple exposures in the interim on the basis that she did not wish to leave boys frustrated after being responsible for arousing their sexual excitation, plus her opinion that seventy-five percent of her peer group engaged in sex relations as the price necessary to obtain dates and sustain popularity. Up to this time, her background closely parallels that of an adult prostitute who has several times been treated for venereal disease. This prostitute declares that her life might have been much different if her also well-to-do parents had curbed her when she challenged authority, and if someone had just taken time to try to understand her conflicts and impulses and had given her some insight into sexual influences and expressions. Parents of the first girl have been sufficiently concerned about her rebellion against authority to seek regular sessions with a psychologist, but they remain entirely insensitive to suspecting that wanton sexual activity might be a part of her delinquency pattern and no doubt would be among those parents who vigorously deny and actually resent any implication that their daughter might have venereal disease.

After presentation of a VD program in a school, one of us was requested to meet after school with a small group which turned out to be about twenty-five girls. When the underlying concern in their questioning was established, they were asked if they had ever discussed the subject with their mothers. Some said they did not feel they could talk such things over with their mothers, some said they had tried to involve their mothers in discussion but were always put off until some other time, while still others said that the only expression they could get from their mothers was that sex was bad or dirty, while they had not found it so unpleasant and could not believe it to be so bad or there would not be such extensive indulgence.

Well-meaning people generally recommend that the parents be involved when venereal disease is encountered in adolescents. Few teenagers interviewed indicate that they can confide in their parents or that they could get them to understand their situation and point of view. Some parents evidence no concern or interest while others become hyper-emotional and stir up unnecessary trouble. When one physician in good faith reported the true condition to the mother of his patient, she insisted upon knowing who was responsible for infecting the child and then stormed over to his home in angry uproar that directly broadcast throughout the neighborhood that he had given her daughter a filthy disease. Thenceforth, she made life miserable questioning every move of her daughter, without ever affording her any support or encouragement and destroying any hope that she would ever confide in her again.

In so many cases, parents allow a gulf to grow between themselves and their children and develop concern only after a pattern of behaviour has been established or an unfortunate situation has already arisen.

A graduate student reported active extramarital sexual indulgence but considered herself safe because she confined herself to older married men who were clean, decent people, and because she bathed and douched regularly.

An astonishing number of patients are seen who are employing contraceptive methods of one sort or another, and who either feel that these measures also prevent venereal disease or are oblivious to the possibility of VD as a consequence of their relaxed sex behavior.

A middle-aged man reported as a contact by an infectious patient vociferously disclaimed that he could possibly have VD because he was white, married, had two children, owned his own business and was a college graduate who associated only with people in his class.

Another matron of the same age was obsessed that venereal disease connotes filth and that the only way she could have contracted gonorrhea was from a toilet seat, or from a sleep-in maid who had worked for her sometime before. She spent an inordinately long time describing how scrupulously clean she kept her household and family. Eventually, she revealed that she had not had relations with her husband for more than a month while he had been away on business and during the period both had outside relations so that it really could not be determined which one had introduced gonorrhea into the home.

Another woman in public employment was convinced that she must have picked up something from one of her patrons as she knew nothing about VD. She knew that her husband had stained underwear and that his physician had given treatment for a "strain", but she was amazed to learn that clean decent people could get VD. Rather than create family friction, her doctor was content to let her believe she was contaminated on the job so long as both completed treatment.

A woman was hospitalized for gonorrheal arthritis. It was found that her husband had contracted the disease a few weeks previously, and had thoughtfully taken his girl friend along when treated, but never even considered the possibility that his own wife needed protection.

Some patients cannot be persuaded to avoid intercourse until their disease is cured and some are callous enough to continue while frankly symptomatic, both before and after reporting for treatment.

A final crowning evidence of abysmal ignorance of venereal disease was seen in a young man who resumed cohabitation with his wife after several months of separation. A few days later he informed her that she should consult a doctor as she had given him syphilis. She appeared in company with her mother by whom she was dominated, and who was determined to refute this accusation upon her daughter. Actually he had gonorrhea and not syphilis, and although several sources, including an encyclopedia, assured him of the mode of transmission, he continued to wonder if the mother-in-law were right and that he became infected in some other way. During the period of separation he received several phone calls from irate wives asking him to keep his wife away from their husbands, but he still did not feel he had proof of any infidelity on her part.

This lengthy recital points up the need for intensified efforts at venereal disease education, not only as a part of the school program, but also through mass media aimed at parents and other adults, and specialized instruction for those in any way concerned with the management of these patients, including not only nurses, physicians and clinic personnel but also the courts and social workers. The ball has started to roll, but a whole lot of people have to get in and push to see that accurate and authentic information is circulated. We have to get across the message that nice people may also become infected and the next victim can be right in one's own family unless proper safeguards are erected.

TUBERCULIN SKIN TESTING

With Specific Reference to the Tine Test

• A review of current thoughts on Tuberculin Skin Testing in the role of atypical acid fast bacilli.

Nathaniel Young, M.D.

For the detection of tuberculosis, the tuberculin test is the single most accurate test, especially for young children. A "negative" x-ray is not necessarily negative, eg, paratracheal lymph nodes may be enlarged but hidden in the mediastinal shadow. The peripheral component of the Ghon complex may be so small as to be undetected. A positive culture of sputum is incontrovertible evidence of active pulmonary tuberculosis, but sputum examination is not a practical measure in mass screening programs even with children in the office. In any case, not all tuberculosis is pulmonary, although it is the pulmonary form that is a public health problem.

The tuberculin test has had its ups and downs, but with modern materials and better understanding its accuracy approaches 98%. The cause of difficulty in the past has been explaining small reactions under 10 mm. We have known that the protein of the culture medium of old tuberculin could cause a reaction apart from that of the tubercule protein. For this reason purified protein derivative (PPD) was developed. With better understanding of atypical acid fast bacilli (atypical AFB), eg, the AFB Battey (Runyon Group III found in Georgia, Florida, Texas, and to a lesser extent in other states, a specific Battey skin test was developed. (Battey PPD (PPDB) has not been available except to researchers, but should be commercially available by the time this article is published.) Where the infection is due to the Battey Bacillus, PPDB provokes a larger reaction than PPD Standard (PPDS).

The Mantoux

PPDS is the most reliable skin test, but a more convenient test is presently available, and that is the *Tine test.* It has the disadvantage that old tuberculin is used and the dose is not absolutely standard. The device is a plastic button with four metal points, each about 2 mm long, and 2 mm apart, with a coating of dried old tuberculin. This keeps well, and could be available in all physicians' offices.

The Volmer Patch Test is mentioned only to be condemned. It is possible to obtain a false negative with this test, and therefore, a false sense of security. A false positive is less disturbing, as at least it will be followed up until proven to be false. But a false negative is accepted at its face value.

The Delaware Tuberculosis and Health Society provides the *Tine test* free for the asking and has supplied material for mass screening programs in school testing in Grades 1 and 7. In doing the test, the left forearm should be grasped so that the skin of the volar surface is slightly tautened. The Tine device is then pressed deliberately against the tautened skin so that there are four pin pricks, and the outline of the of the device is showing. There should be no blood and no pain. A pecking movement should not be used but the test done with

Continued on Page 237

Dr. Young is Director, Medical Services, Emily P. Bissell Hospital, Wilmington, Delaware.

TUBERCULOSIS CONTROL IN DELAWARE

• There can be effectiveness in a Tuberculosis Control Program when community, official, and voluntary agencies work together toward a common goal — a community relatively free of tuberculosis.

FRANK F. PIERSON, JR.
THOMAS D. PEACE

One of the serious disease problems in the State of Delaware at the present time is that of tuberculosis. Although the number of new active cases reported each year is relatively small, the rate per 100,000 is 33.8 and ranks ninth among all States. In 1966. 173 new cases of active tuberculosis were reported compared to 141 for the previous year, and there are currently 645 persons on the tuberculosis register in some stage of activity. Of this number, over 500 are at home and require medical supervision by either their private physician or local health unit.

The present tuberculosis control program is a joint effort with the State Board of Health, Delaware Tuberculosis and Health Society, and U.S. Public Health Service cooperating with the private physicians of the State. The primary responsibility of this program lies in three basic areas; 1) Outpatient care for unhospitalized tuberculosis patients; 2) Referral of persons at risk for evaluation, and 3) Case detection through well established screening programs.

Outpatient management has become extremely important in recent years due to the need to keep patients on medication and under surveillance for a long period of time. There are presently six tuberculosis clinic locations throughout the State of Delaware. Each county has two clinics that are conveniently located for both patients and physicians. Among the services these clinics provide are: tuberculin tests, x-ray examinations, sputum and culture examinations, and medical consultation. The main objective of the clinic program is to make available, community facilities that furnish adequate diagnosis and treatment for optimum benefit of the patient.

The nursing staffs of the four Delaware Health Units interview all newly reported cases of tuberculosis and refer "close" contacts to proper medical facilities for evaluation. The Health Units work very closely with the private physicians in their areas and provide specialized tuberculosis services when requested.

There are at present two tuberculosis screening programs that are carried on throughout the State. These activities are sponsored by the State Board of Health, with the Delaware Tuberculosis and Health Society and U.S. Public Health Service cooperating.

One of these is the 70 mm x-ray program, which uses two mobile x-ray units. In 1966, approximately 68,000 chest x-rays were done. There is an annual evaluation of this program so that areas of high risk are constantly being added as current data indicates. During 1966, 19,687 employees in 102 Delaware industries were x-rayed as the mobile units were

---

Mr. Pierson, B.S., M.A., is Executive Secretary, Delaware Tuberculosis & Health Society; Mr. Peace, B.S., is Public Health Advisor, U.S. Public Health Service.

taken to the employees. There were 277 suspects referred for further evaluation. Another phase is the migrant labor detection program. There were 67 farm locations with 2,378 migrant workers x-rayed in the summer of 1966.

Since follow-up is the heart of a sound case detection program, all suspects were referred for additional evaluation.

A comparatively recent innovation in case detection has been the increased emphasis placed in a "child-centered" program for tuberculosis control. The Tine test is now being done on all first and seventh grade students in the State. It is hoped that by evaluating the tuberculosis reactors in children, those persons with active tuberculosis who infect them may be found. All children who react to the Tine test are interviewed in an attempt to determine who their close associates are, and these associates are given a tuberculosis test and chest x-ray. The child reactors are placed on chemo-prophylaxis in an attempt to abort active infection. During the 1966-67 school year 12,038 children were tested and 112 reactors were found in Delaware schools. The Tine test material is currently being furnished by the Delaware Tuberculosis and Health Society as its part in the cooperative program. This material is also available free to physicians and may be requested through the Health Units or the Tuberculosis Society.

It is believed that the continued emphasis of these cooperative programs of Tuberculosis Control with official and volunteer agencies, working with the private physician, should result in advancing toward the ultimate goal of a community relatively free of tuberculosis.

TUBERCULIN SKIN TESTING

Continued from Page 235

deliberation. The test is interpreted in 48-72 hours.

The maker's recommendation is that the test is positive if there is a 2 mm. area of induration at any one prick point, but using the criterion, there will be many false positive tests. We recommend that the test be read as positive only if there is coalescence of all 4 points, forming a ring of induration. In one school program, using the maker's criteria, 30 positive tests were described, but only seven of them proved positive to intermediate strength (0.0001) PPD. There has been some discussion by physicians with a special interest in childhood tuberculosis of having a register of all positive reactors.

There has even been some talk of calling every positive reactor a case of primary tuberculosis, and if a *recent* convertor, a case of *active* primary tuberculosis. It is therefore important that tuberculin skin testing be done carefully, and interpreted accurately. Unless a Tine test is frankly negative, or strongly positive, a confirmatory PPD. 0.0001 should be done.

In summary, the Tine test is a useful test for mass screening, and also for use by the family physician or pediatrician. It is more accurate in the diagnosis of primary tuberculosis infection than a PA chest film. The test must be promptly administered and criteria other than those of the manufacturer must be used in reading the test. If there is coalescent induration, the test is positive: with *no* reaction, it is frankly negative. Any intermediate reaction is non specific and should be confirmed with a Mantoux, intermediate strength, and this will usually be negative. A positive test should be followed by a PA and a lateral chest film. Recent convertors or young children, without x-ray changes, should receive a course of INH (Isoniazid) for about a year. If the skin test is positive in older groups, INH should probably be given too, and certainly so, if the conversion is known, or thought to be recent.

In ideal circumstances *all* positive reactors should have a course of INH therapy. This would prove difficult for public health authorities, and could be done more easily by the family physician or pediatrician.

CURRENT IMMUNIZATION PRACTICES

• The recommendations of the Public Health Service Advisory Committee on Immunization Practices, concerned with diphtheria, tetanus, and pertussis vaccination practices and tetanus prophylaxis in wound management, are reprinted at the request of the Delaware State Board of Health.

Introduction

Routine immunization against diphtheria, tetanus, and pertussis during infancy and childhood has been widely advocated and generally practiced in the United States during the past 20 years. The effectiveness of these programs is reflected in the decreasing incidence and mortality due to these diseases. The following recommendations regarding immunization have been developed on the basis of this experience and accumulated epidemiologic and immunologic data.

Diphtheria

There has been an accelerated decline in the annual incidence of diphtheria since the end of World War II, and diphtheria is now a rare disease in many areas of the United States. In 1965, fewer than 175 cases were reported. However, localized outbreaks continue to appear, accompanied by serious complications and a case-fatality ratio often greater than 10 percent.

The great majority of cases occur in inadequately immunized individuals. Although most diphtheria is in children, cases and deaths occur in all age groups. Diphtheria toxoid, when administered according to recommended schedules, prevents deaths and greatly reduces clinical illness and complications. Following adequate immunization, protective levels of antitoxin have been observed to persist for 10 years or more.

Tetanus

Although its incidence in the United States has declined in recent years, tetanus remains an important public health problem which can only be eliminated through universal active immunization. In 1964, nearly 300 cases of tetanus were reported, the majority in unimmunized adults. Of these, 180 died, a death-to-case ratio of more than 60 percent. Adequate immunization with tetanus toxoid provides effective and durable protection against the disease. Furthermore, prior active immunization eliminates the need for passive therapy at the time of injury, thus preventing the considerable morbidity resulting from use of heterologous animal serum. In addition, universal active immunization will prevent the significant proportion of cases occurring after trivial injury or with unrecognized portals of entry. Other benefits include the prevention of neonatal tetanus and protection to individuals in various high risk groups.

Tetanus toxoid is highly effective and almost completely free of side effects. Since it also provides longlasting protection, it is an almost ideal immunizing agent. Because there is no natural immunity to tetanus, no general contraindications to tetanus toxoid, and since the organism is ubiquitous, the need for immunization is universal.

Pertussis

Pertussis with its associated high mortality is the major rationale for *DTP* immunization in early infancy. The disease is highly communicable, with attack rates up to 90 percent among unimmunized household contacts. Most cases are reported in infants and young children. In 1964, nearly three-fourths of pertussis deaths occurred in those under age one — some 40 percent of the total number in infants three months of age or younger. Immunization is very effective in reducing both incidence and case fatality. The mortality rate has declined precipitously since the widespread use of standardized pertussis vaccines beginning in the mid 1940's. Since the incidence and mortality decrease with age, while local and systemic reactions to the vaccine increase, pertussis immunization is not recommended above the age of six years.

Preparations Used for Immunization

Diphtheria and tetanus toxoids are prepared by formaldehyde treatment of the respective toxins. Pertussis vaccine is made from a killed bacterial suspension or a bacterial fraction. The toxoids and pertussis vaccines are available in both fluid and adsorbed forms. Comparative tests have shown that the adsorbed toxoids are clearly superior in antibody titer produced and in the durability of protection achieved. The promptness of antibody responses following the administration of either fluid or adsorbed toxoids as boosters is not sufficiently different to be of clinical importance. Therefore, adsorbed toxoids are the agents of choice for all primary and booster immunization.

These antigens are available in various combinations and concentrations for specific purposes. Three antigens are important for public health use:

1) Diphtheria and Tetanus Toxoids and Pertussis Vaccine (*DTP*)
2) Tetanus and Diphtheria Toxoids, Adult Type (Td)
3) Tetanus Toxoid (T)

All preparations contain comparable amounts of tetanus toxoid, but the diphtheria component in the adult type of tetanus and diphtheria toxoids (Td) is only about 10 percent of that contained in the standard *DTP* preparation used in infants and young children.

Dosage

Since the antigen concentration varies in different products, the manufacturers' package inserts provide specific information regarding the volume of single doses.

Schedules

Recommendations regarding usage of these vaccines is based upon immunologic and epidemiologic considerations, taking into account the special circumstances of school entrance and other factors important in disease transmission.

Primary Immunization

Children 2 months through 6 years (Ideally beginning at age 2-3 months or at the time of a 6-week "check-up" if such timing is an established routine.)

DTP — The recommended single dose given intramuscularly on *three* occasions at 4-6 week intervals with a reinforcing dose approximately one year after the third injection.

Adults and children over 6 years

Td* — The recommended single dose given intramuscularly or subcutaneously on *two* occasions at 4-6 week intervals with a reinforcing dose approximately one year after the second.

Booster Immunization

Children 3 through 6 years, (preferably at time of school entrance, kindergarten or elementary school.)

DTP — The recommended single dose intramuscularly.

Thereafter and for all other individuals

Td* — The recommended single dose intramuscularly or subcutaneously every 10 years. (When administered as part of wound management — see specific recommendations — a 10-year interval is determined from *that* date). More frequent routine booster doses are not indicated and may be associated with increased reactions.

Tetanus Prophylaxis in Wound Management

An important part of the management of wounds is prevention of tetanus. The physician is often faced with decisions concerning use of tetanus toxoid for active protection and tetanus antitoxin or tetanus immune globulin (human) for passive protection. The available evidence demonstrates that primary immunization with tetanus toxoid (initial doses plus the reinforcing dose) provides a long-lasting basis for active protection against tetanus. Passive protection need be considered only for the individual without a valid history of at least one injection of tetanus toxoid; indeed, there is evidence that persons who have received a single dose will respond adequately to a single booster dose, even after an interval of several years.

---

*Td is considered the agent of choice for immunization at ages over 6 years on the basis of data regarding its effectiveness in primary immunization of older children and adults and because of increasing reactions to full doses of diphtheria toxoid with age. The use of this preparation obviates the need for Schick or Moloney testing prior to immunization.

The following outline summarizes recommendations for the use of active and passive tetanus immunization in wound management:

1. Primary immunization or booster dose *less than* one year prior to injury:

   a. No tetanus prophylaxis required.

2. Primary immunization or most recent booster *more than* one year prior to injury:

   a. Td* — The recommended single dose intramuscularly or subcutaneously.

3. Incompletely immunized:

   a. Complete primary immunization (See Dosage and Schedules).

4. Unimmunized:

   a. Initiate primary immunization (See Dosage and Schedules).

   b. The decision to use concomitant passive prophylaxis will depend upon medical judgment after evaluating such factors as location, type and severity of the wound, degree and kind of contamination and the time elapsed between injury and medical attention. If passive therapy is elected, tetaus immune globulin (human) is strongly preferred to equine or bovine antiserum. It offers the advantages of longer protection and freedom from undesirable reactions. The currently recommended prophylactic dose of tetanus immune globulin (human) is 250 units for wounds of average severity. When used concurrently, toxoid and antitoxin should be given in separate syringes and at separate sites.

Should tetanus immune globulin (human) be unavailable, equine or bovine antitoxin may be used. The usual dose is from 3,000 to 5,000 units. Administration should always be preceded by careful screening for sensitivity. The following schema is derived from recommendations by the Committee on Trauma, American College of Surgeons:[1]

Determining Sensitivity to Equine or Bovine Serum

History

1. Inquire specifically regarding previous injections of equine or bovine serum. Sensitivity frequently develops after the first injection of animal serum. *If an adverse reaction occurred previously following either serum, do not consider its further use.* (The alternative product can then be subjected to the sensitivity testing described below.)

2. Question the patient with regard to sensitivity to horse dander or beef products. Either may be considered a signal for caution.

Skin Tests (Equine or Bovine Antitoxin)

1. Inject *intracutaneously* 0.02-0.03 ml. of 1:10 normal saline dilution of the tetanus antitoxin.* The area of infiltration should be about the size of the head of a pin. A control test with the same volume of saline should be done for comparison.

2. In 15 minutes or less, a *positive reaction* will be manifested by a hive-like wheal and erythema. The larger the reaction, the greater the sensitivity. An 0.5 cm. wheal may represent a nonspecific response which may be confirmed by the presence of a comparable reaction to the saline alone.

Eye Tests

1. Place a drop of 1:10 normal saline dilution of the tetanus antitoxin in the conjunctival sac of one eye at the time of the skin test using the same material is performed. A

Continued on Page 244

---

*If there is any reason to suspect hypersensitivity to the diphtheria component, tetanus toxoid (T) should be substituted for Td (adult type).

[1] *Early Care of Acute Soft Tissue Injuries.* The Committee on Trauma of the American College of Surgeons. W. B. Saunders Co., Philadelphia and London, 1965, pp. 25-26.

*Wherever animal serum is administered parenterally either for test or treatment, a syringe with 1 ml. of epinephrine 1:1000 should always be immediately available.

PUBLIC HEALTH NURSING IN DELAWARE

A Community Service

Mary C. McQuade, R.N.

One of the favorite topics under discussion today is that of the nursing profession and the role of the nurse as related to patient care services. This subject has received much attention and has been widely debated by physicians, social scientists, hospital administrators, other professionals and many consumers of services. Most important of all has been the concern and movement of the nursing profession itself through its leadership in the American Nurses Association.

"Although differences in role perceptions exist, a fairly constant image persists, public as well as professional, with respect to the nurse who works in the hospital. This image permits her to function at least in part in a patient care centered capacity. The function of her counterpart in the community, the public health nurse, frequently is not as well known or understood. With the growing complexities of extended health services beyond hospitalization, clarification of the role of the public health nurse is warranted. The nurse in the community is eager to work with the physician, the hospital nurse and other related health personnel in coordinated planning for the provision and continuity of patient and family care. The two requests she makes of physicians are to know who she is and understand what she can do."[1]

While the purpose of this paper is to discuss public health nursing services and not the educational preparation of the various members of the nursing team, it would seem relevant to state that the American Nurses Association at its 1966 Biennial Convention pronounced clearly and soundly the profession's responsibility in relation to changes needed in the educational preparation of the professional nurse. President J. Eleanor Elliot reminded the membership that such changes must be affected through an orderly transition and not so rapidly as to threaten needed services to people nor the standing of nurses already licensed as professionals. It was recommended that these changes be a part of this planned change.[2]

It is through membership plus involvement in State Leagues for Nursing (which membership is open to all interested citizens) that the voice of the people who care can best be heard.

At the A.N.A.'s 1966 Biennial Convention, public health nursing voted on a national level to become an integral part of a newly created division — Community Health Nursing, which embraces all nursing groups outside the hospital walls, such as occupational health nurses, school nurses, nurses working in doctors' offices, etc. It is anticipated that practical studies in depth of the functions of the various levels of personnel, rendering nursing services, will begin shortly. It could be hoped such studies would have strong citizen support and be carried on under the leadership of the American Nurses Association and the National League for Nursing.

"Who is the public health nurse and what does she do? She is a skilled nurse practitioner in the community setting outside of hospitals. Her focus is on the patient in a family setting. She sees herself as working with patients and families in clinics, schools, industry, and above all, in the home." Here she may function as a care giver, health teacher and counselor. "She visits families at regular intervals to give nursing care to a convalescent or chronically ill patient, to the aged or han-

---

Miss McQuade, MPH, is Nursing Director, Division of Public Health Nursing, Delaware State Board of Health.

dicapped (both physically and mentally) as well as to an out-patient of a tuberculosis, venereal disease or mental health clinic."[3] Whenever possible, she assists and trains family members, home health aides and practical nurses and every effort is made to have a household member take over the giving of "things" such as baths, back rubs, change of dressings, etc. This decision is based on nursing judgments and is essential if the patient is to receive adequate care. The public health nurse is available only on a *per visit* basis. Always during this learning period the nurse is available for support and guidance. "As a counselor she endeavors to help people to stay well and prevent illness as well as to cope with illness and other health problems."[4]

She provides nursing care in accordance with the medical plan of treatment set forth by the physician for his patient.

She may be the only member of the health team who frequently visits patients at home. As a result, the physician depends on her observations, judgments and decisions regarding patient and family. These decisions are transmitted to the patients' physicians and may well affect future medical care plans. The public health nurse must know her community resources, how to use them and be able to work with other community workers. "In many instances she serves as a case-finder and may be the liaison between the potential patient and a source of medical care; thus she augments but does not replace services provided by physicians and other personnel."[5]

In Delaware, there are two public health nursing agencies that provide nursing care of the sick and disabled in the home, namely the Visiting Nurse Association of Wilmington, Inc., a voluntary agency, and the Delaware State Board of Health, a governmental agency. These two agencies plus three other agencies offering other types of patient care services are certified as Home Health Agencies.

Historically, public health nursing in the United States came into existence in the last years of the nineteenth century. In Delaware, early in the second decade of the twentieth century, both the Visiting Nurse Association of Wilmington and the State Board of Health were providing nursing services in the home and community.[6]

From its beginning, the Visiting Nurse Association of Wilmington, through its public health nursing staff, provided bedside nursing care in the home. This service has continued to grow, and according to its 1966 Annual Report, a total of 43,746 visits were made.[7] Later, as it developed, it moved into health teaching and promotional home visits. The Visiting Nurse Association of Wilmington is responsible at present for bedside nursing service throughout the city of Wilmington and to the Chesapeake Delaware Canal in New Castle County.

The State Board of Health public health nurses on the other hand, due to citizens' needs, stressed group and individual measures for the control of communicable diseases such as typhoid fever, diphtheria, tuberculosis, venereal disease, etc. In some of these areas, due to medical advances and control, public health nursing is no longer needed. In other areas, such as tuberculosis and venereal diseases, it still assumes an active role. Early in her experience, the nurse became involved in prevention and promotion of health through working with mothers and babies in well-child conferences. These preventive services continue today in all three counties as evidenced by the 1966 report of some 35,968 patients seen in 1,911 clinics. During this same period, a few physicians continued to refer patients to the State Board of Health for public health nursing care of the sick in the home. Within the past several years, new programs developed such as those associated with crippled children, mentally retarded, chronic illness (cancer, heart, etc.). The 1966 statistical report reveals some 28,000 home visits made by public health nurses in the State Board of Health, essentially health teaching and counseling, referral and guidance. According to Paul B. Lemkau, M.D., public health nursing humanizes health department services.[8]

The public health nurses in the State Board of Health have for the past several years provided visits for nursing care to the sick and disabled at home. A fee for this service was not charged.

Due to growing and changing citizen health needs in the home as well as recent federal legislation, the State Board of Health, in 1966, intensified its inservice educational program for nurses and as of July, 1966, moved actively into this program giving home health services a high priority. At the same time the State Board of Health began charging a fee for service to families who had been referred by private physicians or clinics for nursing care in the home. A large percentage of the visits for individuals and families are paid for through health insurance coverage such as Social Security (Medicare), Blue Cross extended care, Blue Cross 65 years and over, and commercial insurance companies as well as by individuals themselves. In those instances where patients and families cannot or do not carry health insurance or who are unable through their own means to afford this payment, the public health nurses in the Delaware State Board of Health provide the same service without charge. Hence, all individuals in the State of Delaware who require nursing care of the sick at home, have this service available to them through the Delaware State Board of Health. Health counseling, teaching and guidance continues to be provided without cost. From July, 1966, to June, 1967, over 2,100 home nursing care visits were made to 282 sick and disabled patients. Of these visits, 1,931 were made to patients 65 years of age and over. As physicians become more familiar with the value of nursing care in the home, one would anticipate referrals of all age groups needing this service.

As previously pointed up, the Visiting Nurse Association of Wilmington is responsible for doing the nursing care above the canal; below the canal all types of visits are made by the State Board of Health public health nurses. It is interesting to note that physicians' requests for nursing care in the home began coming in slowly, but have consistently increased, especially in Sussex County.

Within the past few months public health nurses in both the voluntary and official health agencies have, through agreement with the Department of Mental Hygiene, assumed responsibility for the follow-up in the home of those patients 65 years and over on the State Mental Hospital home care program.

According to a census, *Availability of Services for Nursing Care of the Sick at Home*, done in 1964 by the United States Department of Health, Education and Welfare, Public Health Service, Delaware was one of the two states wherein public health nursing services, including care of the sick and disabled at home, were available for all its citizens.[9]

The nursing recruitment into the field of public health nursing has been an encouraging one with vacancies rapidly filled. Over 25 full time field nurses and 7 part time nurses were employed by the VNA of Wilmington. There were 41 full time staff nurses and 6 part time nurses employed by the State Board of Health. During this same period over 150 nurses worked in public schools through the state. Public health nurses in both the VNA of Wilmington and the State Board of Health are equally capable of performing similar services. Both agencies use all levels of nursing, qualified public health nurses (graduates of an accredited college program), registered professional nurses, practical nurses, and the VNA of Wilmington is now using home health aides — substitutes for household members. The need for an adequate supply of qualified public health nurses who can function as team leaders is essential. They are needed to make initial home assessments and judgments on a continuing basis—that is if high quality nursing service is to be given. It is also necessary to have top quality nursing supervision.

It would be reasonable to assume that as more physicians get to know and become familiar with public health nurses and their clinical (generalized) expertise in working with patients in family settings, then and only then, will physicians increase their requests for nursing services to their patients. As medical requests increase, staffs will need to be enlarged if we are to provide comprehensive nursing services geared to meet patient and family needs.

Two very serious gaps appear which interfere with quality public health nursing and more effective use of existing staff. Just as the general practitioner has specialists available to him, so too, the generalized public health nurse desperately needs nurse specialist clinicians who can function both in their speciality and in a consultation capacity to the staff and community. Especially urgent is the need in public health nursing for nurse specialist consultants in the areas of maternal and child health, mental health, psychiatric nursing and chronic illness as well as medical care. The second area which needs strengthening lies in the area of communication between physician, hospital nurse, public health nurse, doctor's office nurse and industrial nurse. As stated by Luther Christman at the 114th American Medical Association Convention through its nursing committee, "For every medical care problem there is a nursing care problem. Workshops assist in analyzing and refining the common problems. Reaching joint solutions to such problems promotes shared understanding through use of common language. This in turn is likely to raise the level of preciseness of communications."[10]

Many physicians who care, have told patients they are as available as the nearest phone. Public health nursing in the State Board of Health, through its flyer sent to all physicians in July 1966, attempted to transmit this same message. Won't you get to know us and use our public health nursing services and skills which are available for your patients in the community?

REFERENCES:

1. Ohlson, Virginia M.: "Profile of the Public Health Nurse." Journal of American Medical Association, Volume 198, No. 3, p. 236, October 17, 1966. Report prepared at request of A.M.A. committee on nursing.
2. "The Profession Prepares for its Future." American Journal of Nursing, Volume 66, No. 7, pp. 1548-1567, July 1966.
3. Ohlson, Virginia M.: "Profile of the Public Health Nurse," pp. 236-237.
4. Ibid
5. Murphy, Marion, Dr.: "Why a Masters-Prepared Practitioner In Public Health Nursing?", Nursing Outlook, Volume 15, No. 3, pp. 33-37, March, 1967.
6. Worden, Victoria V.: "A History of the Delaware State Board of Health, 1879-1958."
7. Visiting Nurse Association of Wilmington, Inc., Statistical Report 1966.
8. Lemkau, Paul B., M.D.: "Mental Hygiene in Public Health," McGraw Hill Book Co., 2nd Edition, p. 29, 1955.
9. Public Health Service. DHEW, "Availability of Services for Nursing Care of the Sick at Home."
10. Christman, Luther P.: "Nurse-Physician Communicators in the Hospital," Journal of American Medical Association, Volume 194, p. 544, November 1, 1955.

CURRENT IMMUNIZATION PRACTICES

Continued from Page 240

drop of normal saline in the other eye can serve as a useful control.

2. Within 30 minutes, a *positive reaction* will be indicated by redness of the conjunctiva.

3. If no conjunctival reaction occurs following use of the antitoxin, the eye test may be considered *negative*.

4. After the result is apparent, a drop or two of epinephrine 1:1000 should be instilled in the test eye.

Interpretations

1. If a *positive reaction* occurs with skin and/or eye test, the animal serum employed in the testing *should not* be administered. Desensitization *should not* be attempted. The physician may either test for sensitivity to the other animal serum or endeavor to obtain tetanus immune globulin (human).

2. Following a *positive reaction* to one animal serum, the other should be subjected to the same skin and eye tests before considering its use in tetanus prophylaxis.

3. If history and both skin and eye tests are *negative*, the likelihood of a reaction to a *standard dose* of the animal serum tested is small, and it may be administered.*

(As an additional precaution encouraged by some, 0.1 ml. of a 1:10 normal saline dilution of antitoxin may first be injected subcutaneously.* If no untoward reaction is observed in 30 minutes, the prophylactic dose may be given.)

---

*Wherever animal serum is administered parenterally either for test or treatment, a syringe with 1 ml. of epinephrine 1:1000 should always be immediately available.

METHACYCLINE* IN THE TREATMENT OF URINARY TRACT INFECTIONS

• Methacycline is a new tetracycline analogue which appears to be effective in the treatment of acute urinary tract infections. There is a low incidence of side effects perhaps because of the lower total dose of tetracycline.

W. J. Holloway, M.D.
R. A. Kahlbaugh, M.D.
E. G. Scott, M.S.

A new tetracycline antibiotic, 6-methylene oxytetracycline, has been made available for clinical use by Chas. Pfizer Co. This new analogue has antimicrobial and pharmacologic properties similar to demethlchlortetracycline (Declomycin)®. Methacycline has been reported to produce higher and more sustained blood levels than tetracycline[1], this being due to delayed renal excretion and possibly to greater serum blinding. In this respect methacycline is similar to demethylchortetracycline, although blood levels with the latter persist for somewhat longer periods of time.

In vitro sensitivity data[2] showed no significant difference in the antibacterial activity between the various tetracyclines, including methacycline. Individual strains of gram-negative organisms show slightly different susceptibilities to the various tetracyclines, but this difference has not been consistent.

Methacycline has been used to treat urinary tract infections and has appeared to be as effective as the other tetracycline antibiotics with no greater incidence of side effects.[2] Lind and Trafton[2] report on the treatment of 49 patients with methacycline and noted no evidence of photosensitivity while given during the summer months.

The current study was undertaken at Delaware Division of the Wilmington Medical Center to evaluate the efficacy of methacycline in the treatment of acute and chronic urinary tract infections as they occurred in an out-patient population.

Materials and Methods

Fifty patients with acute and chronic urinary tract infections were selected for inclusion in this study; 45 of these patients were treated in the Out-Patient Clinic, while in five patients therapy was instituted in the hospital. Fifteen patients were excluded from the study due to lack of follow-up or improper clinical or microbiologic diagnoses, leaving 35 patients for final evaluation. Nine patients were suffering from acute pyelonephritis, 13 patients had chronic pyelonephritis, seven patients had acute cystitis, and in seven patients there was an asymptomatic bacteriuria (Table 1).

Methacycline was supplied* in capsules of 150 mg. for oral administration and as sterile powder for *in vitro* susceptibility testing. The drug was administered by two dosage regimens, either 150 mg. every 6 hours or 300 mg. every 12 hours. The duration of treatment initially was for seven days; but, because of a high relapse rate in the first six patients,

---

*Rondomycin®, Chas. Pfizer Company.

Dr. Holloway is Director, Infectious Disease Research Laboratory; Dr. Kahlbaugh is Associate in Medicine, Wilmington Medical Center; Mr. Scott is Bacteriologist, Delaware Division, Wilmington Medical Center.

TABLE 1

Diagnosis and Infecting Organism

Diagnosis	Infecting Organism			
	E. coli	*Proteus*	*Klebsiella-Aerobacter*	Mixed
Acute pyelonephritis	8			1
Chronic pyelonephritis	9	3	1	
Acute cystitis	6		1	
Asymptomatic bacteriuria	6			

the course of treatment was increased to a minimum of fourteen days.

Urine cultures were obtained by the "clean-catch" technique prior to therapy, on the third to fifth day of therapy, at the termination of therapy, and thereafter for varying periods of time ranging from one day to six months.

Pre- and post-treatment toxicity studies were carried out in all patients; these included complete blood count, urinalysis, serum transaminase, and blood urea nitrogen determinations.

The infecting organism was tested for susceptibility to methacycline and tetracycline by the agar diffusion-disc technique and the test tube dilution technique. Blood was drawn from a representative number of patients for serum antibiotic and antibacterial levels; urine antibacterial levels were carried out in a few instances.

Results

Table 1 indicates that 29 of the 35 patients were infected with *E. coli*, while three patients suffered from infection with a *Proteus* sp., two with *Klebsiella-Aerobacter*, and one patient had a mixed infection. This high incidence of *E. coli* as the infecting organism probably reflects the fact that most of these patients were out-patients and had not had a recent hospital admission.

Twenty-five of the 36 patients treated with methacycline experienced a good result; eight patients experienced a poor result; and in two cases the result was considered indeterminate (Table 2). A result was considered to be "good" if the symptoms were relieved and the urine rendered sterile for a period of at least two weeks following therapy. A "poor" result occurred when the original infecting organism was not eradicated or replaced by a new pathogen. In three of the treatment failures the original infecting organism was resistant to methacycline; in three others the failure was ascribed to the coexistence of significant obstructive uropathy. The cause of failure in two patients who showed no improvement was not immediately identifiable.

Acute Pyelonephritis

Seven of nine patients with acute pyelonephritis experienced a good response to 14 days of methacycline therapy. One patient with acute pyelonephritis failed to respond to 150 mg. of methacycline every 6 hours. This patient, a 53-year-old male, was acutely ill at the time therapy was instituted and vomited two of the first four doses of antibiotic. Subsequently he was found to be in septic shock with bacteremia *(E. coli)* and a white blood count of 2800. He was admitted to the hospital and treated with intravenous cephaloridine therapy with excellent results. The leukopenia rapidly disappeared and was thought to be a result of the overwhelming infection rather than the effect of methacycline.

The patient who showed an indeterminate response suffered from a urethral stricture complicating the acute pyelonephritis. He became afebrile and abacteriuric on methacycline therapy but remained symptomatic un-

TABLE 2
Results of Therapy

Diagnosis	Results: Good	Poor	Indeterminate
Acute pyelonephritis	7	1	1
Chronic pyelonephritis	6	6	1
Acute cystitis	7	0	0
Asymptomatic bacteriuria	5	1	

til the urethral stricture was repaired.

Chronic Pyelonephritis

The results of methacycline therapy in patients with chronic pyelonephritis were less encouraging than in those with acute infection in that less than half of the patients experienced a good result. Of 13 patients with chronic infection, only six had a good result as manifested by urine sterilization and relief of symptoms. Five of these patients were treated initially with 7 days of methacycline, and all five had relapsed within one week of cessation of the drug. Subsequently they were given methacycline for three weeks, and all five remained clinically and bacteriologically free of infection for periods from 3 to 10 months. The six patients with chronic infection who failed to respond to methacycline had persistence of symptoms and bacteriuria; in two of these a change in urinary flora to a new pathogen occurred. One patient with chronic pyelonephritis was considered to be an indeterminate result, because repair of obstructive uropathy carried out at the time of methacycline therapy made it impossible to assess the role of the drug in the clearing of his chronic infection.

Acute Cystitis

Seven patients with acute cystitis manifested by frequency, urgency, and dysuria and a positive urine culture were treated with methacycline for a two-week period. All seven experienced a good result with consequent urine sterilization and relief of symptoms; there have been no recurrences of symptoms, and six of the seven have had a sterile urine culture for at least four months. One patient was lost to follow-up.

Asymptomatic Bacteriuria

Six patients with asymptomatic bacteriuria experienced a good result following methacycline therapy; a seventh patient was considered a failure. These six patients were treated with methacycline for 14 to 21 days and maintained a sterile urine culture for at least one month after cessation of therapy. The patient who failed to respond continued to have a urine culture positive for *E. coli* following two courses of methacycline, in spite of the fact that the organism was susceptible to methacycline *in vitro* and that no urinary obstruction was demonstrable.

Laboratory Data

Pre- and post-treatment toxicity studies were carried out, including blood count, urinalysis, serum transaminase, and blood urea nitrogen. Abnormalities were minimal in the total of 50 patients studied. One patient who developed a leukopenia has been described. In this instance, the overwhelming infection appears the more likely cause of the leukopenia than the small dose of methacycline administered. A second patient experienced a transient leukopenia (3550) after one week of therapy with no reduction in the granulocytic series. Follow-up blood counts have been within normal limits.

A 64-year-old hospital patient with obstructive uropathy due to carcinoma of the prostate received methacycline for six days with a total dose of 3.6 grams. Three days after cessation of therapy the serum transaminase was elevated over the pretreatment level (SGOT 23 units to 62 units; SGPT 9 units to 53 units). No other abnormal liver function studies were noted, and a follow-up study

TABLE 3

Methacycline Susceptibility
(mcg/ml)

Organisms	Total Strains	<0.19 to 0.78	1.56 to 3.12	6.25 to 25	25 to 100	>100
E. Coli	29	9	18	2		
Proteus sp.	10				1	9
Klebsiella-Aerobacter	6	1	2	1		2
Enterococcus	1			1		
Late-lactose fermenter	1			1		
Pseudomonas sp.	10		1	4	5	

in two weeks showed a return to normal values.

Serum antibiotic levels were carried out in 10 patients. Serum was obtained one hour following a 300-mg. dose of methacycline and, in most instances, at five hours following dosing. The serum level at one hour ranged from 0.5 to 1.7 mcg. per ml.; at five hours the range was 0 to 1.2 mcg. per ml.

The serum antibacterial levels were measured in 24 patients; in 22 of 24 patients the serum at one and five hours inhibited the infecting organism in a dilution of 1:2 or greater.

Urine antibacterial levels were measured in a few instances; in these the offending pathogen was inhibited in a urine dilution of 1:32 or greater in all instances. Urine antibiotic levels were not determined.

The minimal inhibitory concentration of methacycline for the pathogens isolated in this study was determined by the test tube dilution technique, and the results are shown in Table 3. The methacycline susceptibility of pathogens isolated in our laboratory was compared to the susceptibility to other tetracyclines, and no statistically significant differences were noted.

Side Affects

There were no instances of photosensitivity observed in the 50 patients comprising this study, although the majority of the patients were treated during the summer months.

Seven patients noted mild gastrointestinal symptoms. including nausea (2), anorexis (2), diarrhea (2), and sore tongue (1). In no instance did the gastrointestinal side effect require cessation of therapy; in both patients experiencing diarrhea this side effect disappeared, although therapy was continued.

Discussion

Prompt and adequate treatment of the patient with acute urinary tract infection results in a high percentage of cure and the prevention of development of chronic urinary tract infection. The selection of the proper antibacterial agent and its administration for the proper length of time is mandatory. Since most of the pathogens isolated from out-patients with urinary tract infection are susceptible to the tetracycline antibiotics, these drugs play an important role in the treatment of these patients with infections of the urinary tract.

In the present study methacycline (in a dosage of 150 mg. every 6 hours or 300 mg. every 12 hours) appeared to be a very satisfactory agent in the treatment of an out-patient population with acute pyelonephritis, acute cystitis, and asymptomatic bacteriuria. Patients with chronic pyelonephritis responded as well to methacycline as to other therapeutic regimens. No attempt was made to compare the effectiveness of methacycline

Continued on Page 250

DELAWARE'S INFANT MAINTENANCE PROGRAM

• The Immunization Activities Program of the Board of Health institutes a project to aid the parents of newborn infants in the field of immunization.

Edward F. Gliwa, M.D.
Harold J. Horoho

Infant immunization is ultimately the responsibility of the parents, and is manifested in their relationship to their private physician or with their Department of Public Health. The main ingredient of this relationship is knowledge of what is necessary to provide adequate and comprehensive protection.

Prior to the establishment of Delaware's Infant Maintenance Program, our research of the problem indicated that; misconceptions regarding immunizations, and a lack of a well-coordinated programs to aid in the motivation of parents, had created a reservoir of unimmunized or incompletely immunized children among our preschool age population. For too many people, immunizations were "school shots" or the parents were unfamiliar with the number, types, and reasons for the various immunizations. "Baby shots" was often a general term that covered almost every procedure the doctor performed on the child. Related to this was the problem of parents neglecting to complete the full series of the child's immunizations; either because they didn't fully comprehend what was necessary, or because this knowledge was not made available to them.

Therefore, in order to improve the general level of immunization among these children, the State Board of Health, in October of 1966, initiated a project entitled, *The Infant Maintenance Program;* whose designed goal was the stimulation of interest, and increase of motivation of the general public in the field of immunization, particularly among the parents of newborn infants.

In attempting to reach this goal, the Program employs education, a direct mass mailing system, and field personnel to perform home visits. These are not three different approaches, but rather three integral components of one over-all program. Basically, the Program is educationally oriented at every level; and since participation has to be voluntary, cooperation must be stimulated by demonstrating that very real benefits will accrue to those who join.

Initial contact with the parents may be made at various levels; radio, newspapers or pamphlets, which are supplied to hospitals for distribution to new parents. This, in a sense, is a softening-up process to prepare them for the first mailing.

This first mailing takes place six to eight weeks after the child is born; and it consists of a letter and two cards, which are sent to the parents. The letter is an explanation of the Program from the Executive Secretary of Health.

One card, which is to be filled out immediately, indicates the parent's willingness to participate in the Program. On the card, the parent indicates if the immunization has begun; and, also, whether it is being provided by a private physician or a clinic. This information affords the Board of Health a broader knowledge of infant immunization status.

Dr. Gliwa, M.P.H., F.A.C.P.M., is Deputy State Health Officer, New Castle County Health Unit, Delaware State Board of Health.
Mr. Horoho, B.S., is Public Health Advisor, U.S. Public Health Service.

The second card, called a temporary record of immunization, is used to record the series of immunizations the child receives when it is taken to either a physician or clinic. When the series is completed, this card is deposited in the mail and returned to the Health Department.

In return for the information received from the parents, the Board of Health supplies them with what is called a Birth-Health Identification Card. This card is of durable plastic, similar in appearance to the familiar credit card. It has recorded on it, all pertinent birth data and the record of completed immunizations. There is also space allocated for future recording of any emergency medical data. This card is only supplied to those who successfully complete their child's full series of immunizations.

The field personnel for the Program will consist of trained representatives, located strategically throughout the State, to aid in the contacting of families who normally do not respond to the usual public health techniques. It is with these families that a special effort must be made, since contact via mass media and by mail does not have the same relevancy for them as it has for the majority of our population.

Since the beginning of the Program, the response rate to the mailings has been better than seventy percent during each month of operation. As more and more time passes, we are better able to identify our problem areas; and concentrate on finding solutions for communicating with those whom we, so far, have not been able to reach.

Our figures for the Program's present operation show that 79% of those responding, go to a private physician, while 17.5% use a health department facility; and 3.5% are military personnel and make use of the Dover Air Force Base Clinic. These statistics demonstrate that the cooperation of the private physician is and will continue to be the single most important factor in the success of the Program.

Still, our greatest challenge remains that of the 25% who remain unresponsive to the normal methods of communication. Ideally, the field follow-up program should provide the main solution to this problem; but since it will not go into operation until November, 1967, it remains an unproven factor.

In the future, it will be our goal to maintain enough flexibility in the Program, that we may be able to improve and modify our procedures to fit the needs of the people. It is our hope that, both the parents and private physicians will see in the Infant Maintenance Program an instrument of aid.

The Infant Maintenance Program is not the complete answer to our immunization problems; but it is a tool, which used thoughtfully, can be an effective means of promoting and maintaining better immunization practices in the State of Delaware.

METHACYCLINE IN THE TREATMENT OF URINARY TRACT INFECTIONS

Continued from Page 248

with the other tetracyclines, but in this limited experience no superiority over the older formulations was observed. We were impressed with the low incidence of side effects when giving methacycline, perhaps a reflection of the lower total dosage of tetracycline required.

Our experience with the large number of patients (5 of 6) who relapsed after one week of therapy emphasized the need for continuing antibiotic therapy of patients with urinary infection for at least two weeks. It appears obvious that patients with significant obstructive uropathy will not be rendered permanently abacteriuric unless the obstruction can be corrected.

(This study was supported by a grant-in-aid from Chas. Pfizer Co.)

REFERENCES

1. Kunin, C. M.: Comparative serum binding, distribution and excretion of tetracycline and a new analogue, methacycline. Proc. Exp. Biol. & Med. 110:311, 1962.
2. Lind, H. E., and Trafton, H. M.: Methacycline, a new antibiotic in the treatment of urinary tract infections. Antibiotics and Chemotherapy 12:640, 1962.

The Physician and The Pharmacist

A monthly feature of the Delaware Pharmaceutical Society

DRUG INFORMATION ABSTRACTS*

Kanamycin and Neomycin

Kanamycin (Kantrex-Bristol) and neomycin (many manufacturers) are probably equally effective against a wide range of pathogenic organisms. Although there are no well-controlled comparisons of the toxicity of the two agents, most clinicians prefer kanamycin to neomycin because they believe it to be less toxic. Kanamycin, like neomycin, can, however, have serious nephrotoxic and ototoxic effects, and its use should be discouraged except in severe infections not responsive to safer antimicrobial drugs.

Clinical Indications

With the notable exception of Pseudononas species, most strains of most species of gram-negative bacilli are susceptible to kanamycin and neomycin.

They provide a broader spectrum of high activity against gram-negative bacilli than any other antimicrobial agents; they also have the advantage of being bactericidal. Most Medical Letter consultants consider kanamycin the drug of first choice for initial parenteral treatment of sepsis believed to be due to gram-negative organisms, pending the results of laboratory tests. Gram-negative sepsis frequently causes shock, for which other therapy is of course required.

When Pseudomonas infection is prevalent in a hospital, or when it is suspected in particular patients, as in those with leukemia or severe burns, or with indwelling urinary catheters, either polymyxin B (Aerosporin-Burroughs Wellcome) or polymyxin E (colistimethate) (Coly-Mycin-Warner, Chilcott) should be used along with kanamycin for initial treatment.

Kanamycin is effective against many of the microorganisms causing meningitis in newborn infants. Because of the gravity of the disease and the poor prognosis in the newborn, however, it should not be used alone. Some *Medical Letter* consultants use cephalothin or chloramphenicol in addition to kanamycin pending the results of sensitivity studies; others prefer to use ampicillin along with kanamycin.

Toxicity

Kanamycin and neomycin can cause serious renal injury and severe irreversible eighth nerve damage in the form of impaired hearing and diminished vestibular function. Eighth nerve damage is generally dose-related though it has followed the use of small doses; it has occurred most often in patients with severe renal impairment. Elderly patients are most susceptible to the ototoxic effects of the drugs.

Audiometric tests should be done twice weekly in patients receiving the drugs for more than seven days, but the onset of deafness may occur several weeks after the drug is discontinued, and may progress to complete loss of hearing. Because of their ototoxicity the parenteral use of kanamycin or neomycin for minor infections, or even severe infections which can be treated effectively with safer antimicrobial agents, seems unwarranted. Renal injury, which is related to both dosage and duration of therapy, is usually reversible if the drug is discontinued at the first signs of toxicity. Adult dosage should be limited, if possible, to 1.5 Gm. daily for no more than one week. Lower doses should be used in patients with renal insufficiency and in those who are dehydrated.

C. M. Kunin, Ann. N.Y. Acad. Sci., 132: 811, 1966

Dosage

The recommended oral dosage of kanamycin and neomycin is 50 mg/kg daily, divided into four doses. The recommended parenteral dosage is 15 mg/kg up to 1.5 Gm daily, divided into two or three intramuscular doses or, to initiate therapy in seriously ill patients, 15 to 30 mg/kg per day in two or three intravenous doses. For newborn and premature infants, the dosage is 5 to 15 mg/kg daily in two to four intramuscular doses; in older infants and children, about 15 mg/kg daily may be used in severe infections. In patients with severe renal impairment, the full initial dose can be given but subsequent doses should be reduced and adjusted to give safe blood levels (below 30 mcg/ml).

---

*This is a monthly series of drug information abstracts gathered from current articles and prepared by the pharmacists with the purpose of alerting you on drugs and/or their complications.

Conclusion

Although parenteral kanamycin and neomycin are probably equally effective against a wide range of organisms, *Medical Letter* consultants consider kanamycin to be less toxic and therefore the preferred drug. Kanamycin is the drug of choice for initial treatment for gram-negative bacillary sepsis pending completion of susceptibility tests. Once susceptibility tests are completed, therapy, preferably with a safer drug, should be based on the tests.

Diphenylhydantoin (Dilantin) in Cardiac Arrhythmias

Sodium Diphenlhydantoin USP (Dilantin-Parke, Davis; and others), a drug long used as an anticonvulsivant, has been used experimentally by many physicians for the treatment of some cardiac arrhythmias, though it is not offered by the manufacturers nor approved by the Food and Drug Administration for such use.

Diphenylhydantoin administered intravenously is reported to be particularly effective in suppressing frequent premature ventricular contractions and paroxysmal ventriculars and supraventricular tachycardias (R.D. Conn., New Eng., J. Med 272:277, 1965), especially when the arrhythmia is the result of digitalis intoxication (m.R. Rosen at al, Circulation, 34, Suppl. Ill: 201, 1966) The drug may also reduce the ventriculate in patients with atrial flutter of fibrillation, though conversion to regular sinus rhythm is rarely accomplished (j.T. Bigger, Jr. et. al, Bull. N.Y. Acad. Med., 42:1039, 1966) Diphenylhydantoin has also been used orally for both prevention and treatment of recurrent cardiac arrhythmias; the effectiveness of oral administration has not, however, been established.

Hazards

Intravenous diphenylhydantoin must be administrated slowly and with great caution. Most investigators have used doses of 150 to 250 mg administered over a period of five minutes; rarely has the dose exceeded 10 mg/kg. Even with these doses, the intravenous administration of diphenylhydantoin in patients with cardiac arrhythmias carries with it severe hazards, including hypotension and shock, bradycardia, and respiratory or cardiac arrest.

A single recent issue of the Journal of the American Medical Association (200:335 337, April 24, 1967) carried two separate reports of fatalities in three patients given the drug; two of the patients died of cardiac arrest and one as the result of ventricular fibrillation. A *Medical Letter* consultant reports that a patient with atrial flutter and a 2:1 block developed a 10:1 block when diphenylhydantoin was administered intravenously.

Intravenous diphenylhydantoin is hazardous even in patients without cardiac arythmias but who are being treated for status epilepticus or other convulsive disorders.

H. Kutt (JAMA, 201: 210, July 17, 1967) reported two deaths in patients in whom the drug was used to control convulsions; each patient received 500 mg rapidly and both died of respiratory arrest.

Conclusion

Most patients with cardiac arrhythmias respond to standard anti-arrhythmic therapy with either a digitalis preparation, quinidine (many manufacturers,) Procainamide Hydrochloride USP (Pronestyl-Squibb; and others), Lidocaine USP (Xylocaine-Astra; and others), electric conversion, or, inpatients in whom the arrhythmia is due to digitalis intoxication, potassium therapy. All of these therapies are of established value, and are safer than diphenylhydantoin. When these measures are ineffective, however, a cautious trial of intravenous diphenylhydantoin may be warranted.

The Medical Letter - on Drugs and Therapeutics - Vol. 9, No. (Issue 224) August 11, 1967

In Brief

Speakers On "Ask The Doctor"

Speakers for October, 1967, on the Tuesday Radio Program, (11:05 a.m., WDEL) produced by the Medical Society of Delaware are: Oct. 3, William H. Duncan, M.D., *Disaster Planning;* Oct. 10, Emerson Y. Gledhill, M.D., *Cancer;* Oct. 17, Ernest C. Shortliffe, M.D., *The Why of Hospital Cost;* Oct. 24, David J. King, M.D., *Cerebral Palsy;* Oct. 31, Edward M. Krieger, M.D., *Heart Disease.*

Personal Glimpses

At a meeting of the International Society for Comprehensive Medicine in Chicago, Sept. 29-Oct.1, 1967, William T. Reardon, M.D., gave a paper on Group Hypnotherapy, and served on the faculty for the Sunday afternoon Workshop on Hypnotherapy in Medicine; on Sept. 27-28, Dr. Reardon was guest lecturer at the Guest House Sanitarium, Lake Orion, Mich.; subject: *Treatment of Alcoholism by Group Hypnotherapy* . . . Carl I. Glassman, M.D., Wilmington, has been appointed by the Medical Society of Delaware to serve as Liason Officer to the Delaware Association of Medical Assistants.

Wyeth Pediatric Fellowships

Two-year Pediatric Fellowships are available now for residencies commencing July 1, 1968. All applications must be in by December 1, 1967. Each of these fellowships provides $4,800 over two years toward the advanced training required for board certification in pediatrics. Wyeth's monthly payments, made directly to recipients, are in addition to the usual stipends paid to residents by the institutions in which they train. Eligible, are interns, physicians completing their tour of duty with the Armed Services or the U.S. Public Health Service. Applicants must be citizens of the United States or Canada. Those who have already started Pediatric Residency training are not eligible.

ISCM First Annual Meeting

The First Annual Meeting of the International Society for Comprehensive Medicine will be held Sept. 19-Oct. 1, 1967, in the Knickerbocker Hotel, Chicago, Ill. Medical Society members are cordially invited to attend the sessions. Address inquiries to: Patricia M. Dorr, Exec. Dir., ISCM, Suite 1003, 360 N. Michigan Ave., Chicago, Ill. 60601

World Medical Association Membership

Individual membership in the World Medical Association is now open to all members of the American Medical Association. Annual membership fee is $10.00; five-year membership fee is $50.00. For futher information or application blanks, write: The World Medical Association, Inc., 10 Columbus Circle, New York, N.Y. 10019

Home Health Aide Service

The following announcement from the Visiting Nurse Association of Wilmington, Inc., should be of interest:

1. The VNA can now offer the services of a Home Health Aide, who is an unlicensed, non-professional worker, specifically oriented to the care of the aged and chronically ill at home. She helps the patient with such things as bathing, dressing, walking, meal preparation, and light housework. She may also run errands, and accompany the

patient to the doctor's office or clinic, since she stays with the patient four or eight hours during the day, and depending on the patient's needs, this might be from a half-day to 5 days a week.

Consistent with VNA policy for all other services, the physician must provide a written order for the placement of a health aide.

2. VNA wishes to remind physicians that Medicare patients may be eligible for home health services under Part A and Part B. This includes nursing, physical therapy, and health aides.

   There is one important qualification that must be met before a patient may receive 100 fully covered visits under *Part A*. The physician must prescribe the service *before the 14th day of discharge* from the hospital or an extended care facility. If the arrangement is not made by the physician before the 14th day, 100 visits are charged under Part B providing the patient is insured for this voluntary plan. Part B of Medicare pays for only 80% of the cost, after a $50 deductible has been met by the patient.

   Thus, patients who have incurred major expenses because of a long term or terminal illness are seriously affected and distressed when a referral on the 15th day deprives them of Part A benefits.
3. The VNA has a new brochure which is available for distribution in physicians' offices, and a supply will be delivered upon request.

Fellowships Available

Practitioner-trainee Fellowships are being offered as part of the Clinical Cancer Training Program inaugurated by the Georgetown University Medical Center and supported by a grant from the National Cancer Institute. A stipend of $1500 is available for an individual fellowship, depending upon the applicant's qualifications, and are available for one month periods only. The four fellowships are: Radiotherapy for the Practicing Radiologist; Cancer Chemotherapy for the Practicing Physician; Fellowship in the Practice of Nuclear Medicine; Fellowship in Surgical Oncology. Contact either of the Co-Directors, J. Robert Andrews, M.D., or Bruce Shnider, M.D.

CLINICAL NOTICES AND MEETINGS

Research In Medical Education

The Association of American Medical Colleges will hold its 6th annual conference on research in medical education at the Hotel Hilton, New York, October 28-29, 1967.

Symposium

The Jefferson Medical College of Philadelphia presents a Symposium on Nov. 3-4, 1967, on *Genetics in Medical Practice*. The fee is $35.00 for practicing physicians. For further information, write: John H. Killough, M.D., Assistant Dean, Jefferson Medical College, 1025 Walnut Street, Phila., Pa.

Hahnemann Courses

Postgraduate courses sponsored by the Hahnemann Medical College and Hospital, Philadelphia, are as follows:

General Internal Medicine, Oct. 4, 1967, through Mar. 27, 1968, every Wednesday—1-4 p.m., at the College.

A Current View of Congestive Heart Failure, Nov. 13-14, 1967, Sheraton Hotel.

Human Sexual Function and Dysfunction, Nov. 17-18, 1967, Marriott

Motor Hotel.

Subsequent postgraduate schedules will be published later.

Courses Announced

Gastroenterology

The American College of Gastroenterology will hold its annual postgraduate course at the Biltmore, Los Angeles, Calif., November 2-4, 1967, and will present the advances in diagnosis and treatment of gastrointestinal diseases and a comprehensive discussion of diseases of the esophagus, stomach, pancreas, liver and gall bladder, and rectum. For information write: The American College of Gastroenterology, 33 W. 60th St., New York, N.Y. 10023.

Postgraduate Courses

Temple University Health Sciences Center will hold two courses in *"Office Psychiatry and Psychosomatic Medicine."* Course 1, Basic Course; Course 2, Advance Seminar in Adult Psychiatry. These will start in the fall of 1967, held each Wednesday at the Health Sciences Center. The fee for Course 1 is $40; fee for Course 2 is $30. For further information, write: Barney M. Blind, Director, 230 W. Allens Lane, Philadelphia, Pa.

Pediatric Allergy

There will be a Post Graduate course in Pediatric Allergy on Nov. 8-9, 1967, held at St. Christopher's Hospital for Children, Pediatric Department of Temple University Hospital, given in conjunction with the 1967 Asthma Symposium, Children's Heart Hospital of Philadelphia. Address inquiries to the Director of the Asthmatic Center, Children's Heart Hospital: Leonard S. Girsh, M.D., 3701 N. Broad St., Phila., Pa. (40)

Nutrition And Metabolism

The 12th Annual Conference on Nutrition and Metabolism which is sponsored by the Committee on Nutrition and Metabolism of the Philadelphia County Medical Society, the Philadelphia Pediatric Society and the Council on Foods and Nutrition of the AMA will be held on Wednesday, October 18, 1967, at the Philadelphia County Medical Society, 2100 Spring Garden Street, Philadelphia, Pa., 19130. Write Dr. Charles R. Shuman for particulars.

Scientific Heart Sessions

Six sessions in Clinical Cardiology will be given during the three-day meeting of the American Heart Association's 40th annual meeting, October 20-22, in San Francisco's Civic Auditorium. Forms to register, including hotel reservations, etc., may be obtained through your local heart association or by writing the AHA national office, 44 E. 23rd Street, New York, N.Y., 10010.

Arteriosclerosis Council

The American Heart Association's Council on Arteriosclerosis will be held Wednesday and Thursday, October 18-19, in San Francisco's Town House. This program immediately precedes the three-day Scientific Session. For further information, write: Alfred M. Bennett, M.D., AHA, 44 E. 23rd Street, New York, N.Y., 10010.

Heart Council Seminars

Four all-day postgraduate seminars will also precede the Heart Association's Scientific Session which will be held in San Francisco's Hilton Hotel on Thursday, October 19. The four titles for council courses are on: basic science, circulation, cardiovascular surgery, high blood pressure research, rheumatic fever and congenital heart disease.

Auxiliary Affairs

ANNUAL REPORT OF THE KENT COUNTY AUXILIARY

The Auxiliary to the Kent County Medical Society has had a busy and active year. We now have a total membership of thirty-six members. Two new members were added and one resigned because of a change of residence to another state. We hope to increase in number this next year as new doctors are moving into the area. We put forth a special effort to welcome the wives of physicians who are at the Dover Air Force Base. They were invited to attend our luncheon meetings and many have attended and feel that they "belong" to the community since our welcome. We hope that their interest continues.

We had four meetings during 1966-1967, with a planned program at three meetings. In the fall, the Director of the Practical Nurse Program at the Kent-Tech-Vocational School gave us an interesting talk on the goals and needs of the program. It extended our interest in the possibility of contributing to their scholarship fund in the coming year.

In November and December the A.M.A.-E.R.F. Christmas cards were offered for sale to the members. They were well received and sales went well.

In March, we held our annual Future Nurses Club tea at the Caesar Rodney High School. Seven High School Clubs were present and everyone had an enjoyable time. A representative from Wesley College came and gave the girls a most informative talk on the new two-year nursing course offered this fall at Wesley. Eleven girls from the clubs are planning to enter nursing training this year, indicating the Health Career program has been a success.

We purchased a dozen new candy-striper uniforms as the number of volunteers from the high schools has increased. The annual awards to outstanding students of Future Nurse Clubs will be given at the commencement programs.

In the spring, the movie on the new research building in Chicago was shown. It is nice to see how some of our money goes toward being helpful to many, in the years to come.

Our meetings and affairs are quite well covered by our local paper. This past month the pamphlets *Milestones to Maturity* were distributed to the local high schools. This too was covered by newspaper publicity.

This past year has been a progressive one and very rewarding because we feel that we have aided the AMA in its program. Our hopes are to continue to grow and progress further in the coming year.

Respectfully submitted,
Mrs. William A. E. Leitzinger, Jr., *President*

COOKBOOK* EXCERPTS

ROPA VIEJA (Modified)

sirloin cubes (1 lb. per 2-3 persons)
1 large green pepper
2 cloves garlic, crushed
2 tablespoons olive oil
tomato sauce also if you like
1 large onion
1 can tomatoes
bay leaf
oregano

Brown small beef cubes, add vegetables, oregano and bay leaf. Simmer gently half hour. Add olive oil, simmer a little longer. (This recipe is from the old native Cubans on the Florida Keys. The recipe can be cooked the day before.)

William H. Duncan, M.D.

---

*Proceeds from this book are used for the benefit of the Scholarship Fund for Delaware nurses. These books can be purchased by writing to: Mrs. Leslie W. Whitney, 1703 Talley Road, Forest Hills Park, Wilmington, Delaware, 19803, and mailing a check for $2.50.

Delaware
Medical Journal

OCTOBER, 1967
VOLUME 39
Number 10

This issue is dedicated to
Dr. Lewis B. Flinn
by his former Residents

Editorials . . .

L. B. F.

This issue of the Delaware Medical Journal is a Festschrift prepared by former hospital residents of Lewis B. Flinn. Several of those submitting papers have credited William J. Holloway with the origination of the idea. The proposal has been received with remarkable enthusiasm by all men and women who trained under the "Chief."

It is my privilege to be invited to introduce this issue with a biographical sketch of our dean of internists in northern Delaware — the squire of Sills Mill.

Lew attended Friends School in Wilmington and then Princeton University where he played varsity basketball and was elected captain of the team. After graduating Phi Beta Kappa he entered Johns Hopkins School of Medicine, graduating high in his class (AOA and such) in 1922. He interned on the Hopkins Hospital Osler Service (at the time there were only five interns!) This was followed by a residency at the Children's Hospital in Philadelphia and then a year at the Cragmor Sanitorium (Colorado Springs) in the study of chest disease. Then came a year as resident at Hopkins followed by several months of study in Hamburg and Munich, Germany.

Upon his return from Europe he was married to an acquaintance of his house staff days in Baltimore, Elizabeth Winchester Waters, the daughter of a lawyer. Miss Waters had received some preparation for her life as the future wife of a physician by serving as the secretary to the late and well-known Dr. Louis Hamman.

Lew is the son of a physician, the brother of another (a retired orthopedic surgeon). The medical proclivity has reached the third generation through Robert B. Flinn. The salient interests of Lew Flinn have ranged from pediatrics to metabolic diseases, from the founding of the Delaware Academy of Medicine to the training of younger men and women. He gave much time and effort to the educational process when Director of Medicine at the Memorial and Delaware Hospitals. He has served in various offices in his county and state medical societies; is active in numerous national societies; was governor for Delaware in the American College of Physicians. More recently he has been effective in guiding the plans to the realization of a merger of three hospitals in the creation of the Wilmington Medical Center. Much more could be said of his accomplishments at the risk of prolixity.

Lew Flinn's tolerance and patience in living and working with both patients and fellow physicians has had a charismatic quality shining in his leadership. He has an insight into human nature and human needs which few other citizens possess. High standards of medical care and superior intraprofessional relationships in our state reflect much of his qualities of fairness and unselfishness. Look about you at the number of ex-residents who entered practice in the State under Lew's encouragement.

There should be a word finally on Lew's innate dignity which occasionally has been mistaken for acerbity. Following a meeting at the Academy of Medicine (Commander Tullis had spoken on experiences at Bikini) an associate told L.B.F., "The meeting last night was the best I've attended here. However, it's the only one I can recall in which you did not enter the discussion." L.B.F. chuckled and observed, "The two facts must be causally related."

A patient has commented, "What's this thing about Dr. Flinn's not having a sense of humor? He has the most delightful sense of humor that I have ever known."

LEMUEL C. MCGEE

In writing about a prominent man, whether he be an industrialist or a physician, temptation is always there to be immediately factual — giving the date of his birth, when he graduated from college, and information of that sort. In writing about Lewis B. Flinn, this temptation is not so great, and this is likely because the activities and the utterances of the man are such that it is far easier to go to the things that he has said and done rather than to statistics.

Some years ago the University of Delaware recognized Dr. Flinn as a physician and a scholar as well as a contributor to the well being of his community by awarding an Honorary Doctor of Science degree. On this occasion, a local editorial carried the following:

"As a leading physician, Lewis B. Flinn is a philosopher and statesman in his field of science. He bears the mark borne by the greatest modern scientists — an unlimited respect for pure, basic research."

On another occasion, in a subject far removed from research but implying appreciation, both of the absorbing nature of medical practice and the best interests of the public the physician serves, another editorial stated the following:

"But the physicians now indicate they are aware they must do something for themselves. The Medical Society of Delaware, accepting Dr. Lewis B. Flinn's prescription, is preparing to employ public relations counsel. In the light of events, that's a sensible move. But in a small, intimate community like Delaware, where everyone knows nearly everyone else, a question can be asked. Why should the doctors have to educate people this way?"

We think Dr. Flinn put his finger on it. "Our public relations efforts," he said, "must include the gradual education of physicians in regard to social trends and responsibilities; we are citizens as well as physicians."

It is a remarkable man, indeed, who can look objectively at himself and his associates as he studies the impact of their professional efforts.

Dr. Flinn himself reflected his penetrating analysis of Delaware and its citizens as well as his medical colleagues with observations that were almost prophetic in his speech upon completing his term (1954-1955) as President of the Medical Society of Delaware. The quality of truth in these observations is even stronger in 1967 than in 1955.

"In the field of post graduate education the Delaware Academy of Medicine and the University of Delaware should be of great assistance. Both have expressed their desire and willingness to work with us.

"It is most important to stimulate physicians to attend conferences, rounds, and meetings already scheduled in parts of the state remote from their sphere of activity. The doctors in New Castle must be more conversant with physicians and their problems in Sussex and vice versa. It is not to be inferred that physicians in any one area are superior to, or are better informed than those in another area. Each can learn from the other. The result will be better medicine practiced, better service given and a stronger society with a unified plan for medical progress. The time has passed, when even a young physician can safely go about his own practice oblivious of the problems here discussed. These problems may not be as interesting as a clinical pathological conference, but if not given serious thought and properly solved, the freedom and individuality of the practicing physician may well disappear. The State Society is the only practical means of coordinating policy for Delaware physicians. Should it fail, it will become a useless, decadent organization with a brilliant past and no future."

Summarizing all of these observations, it may be best to say simply that during his long career, Lew Flinn has been an incomparable friend, a superb physician, an outstanding servant of his native state, a splendid scholar, a progressive thinker, and a courageous protagonist in all of those matters in which he believes.

GERALD A. BEATTY

Personal Reflections

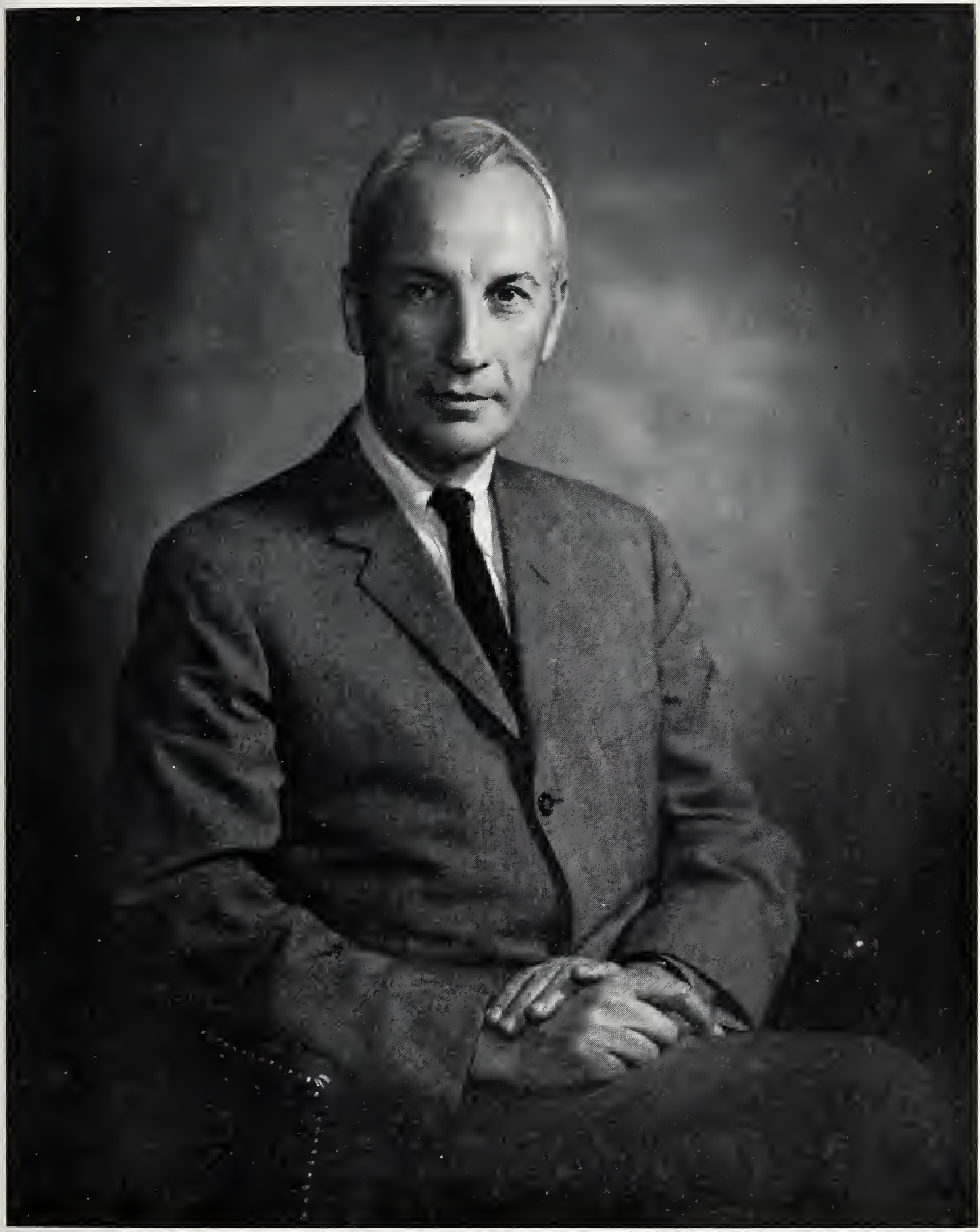
During the late 1930's the hallmark of the medical service at the Delaware Hospital was the knee-length white laboratory coat and the plain bell-type stethoscope adorning the person of Lewis B. Flinn, M.D. Tempered by a previous intern year in a distinctly academic environment, the confusion and frustration resulting from the casual supervision on other services were borne heavily. The inevitable (and enviable) tour of duty on the medical service under Dr. Flinn's teaching and guidance proved restorative and indeed inspirational in the selection of the field of future medical endeavor. Communication and even infrequent personal contact during the intervening years of residency and later military service sustained and enhanced the image. His efforts and contributions in pioneering the establishment of resident training programs after World War II in two local hospitals reflect the high standards of practice and teaching which he has always maintained for himself as well as those who have been fortunate enough to have been associated with him. This issue of the Journal is a tribute to his interest and ideals.

Association in practice for a period of six years failed to dim the lustre of the complete physician in spite of his heavy commitments in both medical and community affairs. One recalls easily the tenacity of purpose displayed in the controversy regarding poliomyelitis in 1948-49, leading to epidemiologic studies that identified "the Wilmington virus" almost in time for the national recognition which came to Coxsackie, New York. Again in 1948 Dr. Flinn co-authored the exciting article describing the cure of Rocky Mountain spotted fever with the use of para-aminobenzoic acid (PABA). He took part in the early organization of the American Diabetes Association and has served as a national officer. An example of his early activity in this field is a paper published in the Annals of Internal Medicine in 1947 entitled, "Alloxan in the Treatment of Islet Cell Carcinoma of the Pancreas." Even a solitary tree standing in front of 503 Delaware Avenue attained a certain notoriety by receiving a "transfusion" at the hands of a local tree surgeon. These isolated episodes were, however, only temporary distractions from a consistently high quality of patient care and standards of excellence in the practice of medicine which might be aspired to by others but rarely achieved.

An amusing but verified anecdote concerns the approach of a reputedly garrulous patient at a social function with the request for a prescription for undisclosed symptoms. Dr. Flinn obliged with a pad from his pocket. Later, on presentation to the pharmacist, the prescription was found to read: "Don't talk so much."

The charter of the American College of Physicians has been in Dr. Flinn's custody for many years in spite of his present uncertainty regarding its precise location. Symbolically it has been in proper hands. Serving as Governor for Delaware of that organization from 1924 until 1948, his tenure is remembered and respected by the many prominent, if now elder, physicians from all parts of the country who unfailingly, at College Sessions, inquire for "Lefty" and appropriately identify him as the dean of internal medicine in Delaware.

WARD W. BRIGGS



© *Willard Stewart, Inc.*

Lewis B. Flinn, M.D.

Medical Residents

DELAWARE HOSPITAL 1946 - 1962

JOYCE W. ANDERSON
ALFRED E. BACON
GEORGE E. BELL
JOHN H. BENGE
GUSTAVE BERGER
E. EDWARD BITTAR
IRVIN N. CARROL
TAHSIN CEREZCI
RONALD DUFFIELD
OLAN D. FEAR
JAMES F. FLANDERS
JOHN H. FURLONG
JOSEPH A. GLICK
HENRY J. GLOETZNER
GERHARD HARTENAUER
GEORGE B. HECKLER
JAMES M. HOFFORD
WILLIAM J. HOLLOWAY
ROBERT E. JONES
RICHARD A. KAHLBAUGH
GEORGE H. KEATES
ROBERT W. McLAUGHLIN
FELIX MICK
ALLSTON J. MORRIS
ROBERT S. MUTCH
MEHMET M. OZDEMIR
BERNADINE Z. PAULSHOCK
ROBERT S. PICARD
WARREN D. POPE
RICHARD D. PULLEN
CHARLES S. RIEGEL
JACK C. SALLEE
DOUGLAS W. SANDERS
WILLIAM P. SCHANE
EDWIN J. SMITH
VAUGHN R. STURTEVANT
IGNATIUS J. TIKELLIS
WILLIAM VANDERVORT
ANTONIO A. VERSACI
EDWARD J. VOGELER, JR.
CHARLES WALKER, JR.
DENE T. WALTERS
ROBERT L. WUERTZ

MEMORIAL HOSPITAL 1941 - 1954

GEORGE ALEXANDER
EDWARD BECK
JOHN H. BENGE
WILLIAM C. BLASE
JOSEPH BRAUDO
IRVIN N. CARROL
MARVIN H. DORPH
RICHARD FLAHERTY
ROBERT W. FRELICK
LEE HARRINGTON, JR.
JOSEPH J. KOZMA
RICHARD A. NEUBAUER
MARY NI
OLEH SLUZAR
STANLEY VERBIT
CHARLES WINTHROP

The authors of the scientific articles in this issue have all served as medical residents during the time Dr. Lewis B. Flinn was Director of Medicine.

NOSOCOMIAL INFECTION

REPORT OF AN OUTBREAK OF WOUND INFECTIONS DUE TO TETRACYCLINE RESISTANT GROUP A STREPTOCOCCUS

W. J. Holloway, M.D.
E. G. Scott, M.S.

Since the advent of the antibiotic era the penicillin-resistant staphylococcus has played a major role as the causative agent in hospital acquired infection, while there has been an apparent reduction in those due to Group A β-hemolytic streptococci.[1] It has been assumed that this reduction is due to the extreme sensitivity of Group A streptococcus to the antibiotic agents. Although occasional reports of isolated outbreaks caused by streptococci have occurred,[2,3] their incidence is not nearly as great as those hospital acquired infections caused by the enteric gram-negative bacteria.[4]

During a nine-month period in 1966 we had the opportunity to observe a small outbreak of wound infections due to a tetracycline-resistant strain of Group A streptococcus. Nine patients were infected, and in seven of the nine we were able to obtain serological typing of the strains through the courtesy of Dr. Max Moody*. In each of these the infecting organism proved to be a Group A, T agglutination type 9. Although we were not able to identify the source of this outbreak, it seems unlikely that by chance alone the same T type 9 (a relatively rare type) Group A streptococcus would cause this number of infections in the same hospital.

Case Reports

Case No.1: An 18-year-old girl came to the Emergency Room of the Delaware Division complaining of vague costovertebral angle tenderness, fever (105 F) and chills. The urine contained 10-15 white blood cells per high power field, and urine albumin was reported as 1+. A urine culture was not done, but a blood culture was taken.

The patient was given nitrofurantoin and seen again in 72 hours at which time the symptoms were slightly improved; the temperature was 101 F, and the previous therapy was continued. The blood culture subse-

---

Dr. Holloway is Director, Infectious Disease Research Laboratory, Wilmington Medical Center; Mr. Scott is Director, Microbiology Department, Delaware Division, Wilmington Medical Center.

*Chief, Streptococcus Unit, Bacteriology Section, Laboratory Branch, National Communicable Disease Center, Atlanta, Georgia.

quently revealed a Group A streptococcus, T type 9. Because of a change in Emergency Room physicians, proper attention was not given to the positive blood culture; however, the patient improved without sequellae. She was admitted to the same hospital in November, 1966, for evaluation of the urinary tract. This revealed no significant abnormalities.

It is apparent that this patient did not acquire the Group A streptococcus in the hospital, since she had not had a previous hospital visit. Whether or not this represents the index case is conjectural. The house physicians who attended her were not involved subsequently with any of the other cases. It is possible, however, that surgical residents caring for subsequent infected cases could have examined or attended this patient while she was in the Emergency Room. It should be noted that a lapse of 12 weeks occurred between the time this patient visited the hospital Emergency Room and when the second infected case was detected.

Case No. 2: This 35-year-old man had an uneventful excision of a pilonidal cyst performed on April 20, 1966. The day following surgery the patient's temperature spiked to 102 F, and profuse wound drainage was noted. The following day the temperature had risen to 104 F. The patient was then started on tetracycline and streptomycin therapy. The wound culture subsequently was reported as showing a Group A β-hemolytic streptococcus resistant to tetracycline; in view of this, the therapy was then changed to penicillin. Within 48 hours the patient was afebrile and he was discharged on the following day. Some drainage from the wound persisted. This Group A β-streptococcus was discarded inadvertently without typing; but, since tetracycline resistance was observed, it is likely that it was similar to the organism from the other patients in this outbreak.

Case No. 3: A 40-year-old man was admitted to the hospital on May 7, 1966, because of chronic calculous cholecystitis with an acute exacerbation. Two days following admission an uneventful cholecystectomy was performed. The day following operation the patient's temperature rose to 101 F and on the following day to 102.6 F. At this time he began to show manifestations of mild shock, requiring intravenous aramine and steroid therapy. A blood culture taken at this time subsequently was reported negative, but a culture taken from the wound revealed a Group A β-hemolytic streptococcus resistant to tetracycline. Cultures taken from the wound on the two subsequent days also revealed the same organism which eventually was identified as T type 9. The patient was treated initially with chloramphenicol and cephalothin. Following identification of the organism, intramuscular procaine penicillin therapy was instituted, and the patient made an uneventful recovery. A culture taken from the gallbladder at the time of surgery proved to be sterile; therefore, it would seem reasonable to assume this infection to be hospital-acquired.

Case No. 4: A 51-year-old woman with a negative past medical history was admitted to the hospital because of a scalenus anticus syndrome. Section of scalenus anticus muscle and resection of the right cervical rib was carried out on May 17, 1966. On the first postoperative day the patient's fever was elevated to 101 F and on the second postoperative day to 104 F. Therapy was started with tetracycline, and this was continued for three days without improvement. On the fourth postoperative day incision and drainage of the wound was carried out, and therapy was started with cephalothin, without signficant improvement. The wound culture revealed Group A β-hemolytic streptococcus resistant to tetracycline, and therapy with intramuscular procaine penicillin was instituted. The streptococcus isolated from this case subsequently was found to be a Group A β-hemolytic streptococcus, T type 9.

Case No. 5: A 67-year-old man with a past history of hypertension appeared to be in good health when admitted to the hospital on May 16, 1966. Uneventful elective repair of bilateral inguinal hernias was carried out on May 17, 1966. On the first postoperative day the patient's temperature elevated to 103 F, and on the second postoperative day an elevation of 104.4 F was associated with severe shock. Because the patient had an indwelling bladder catheter, gram-negative rod septicemia was suspected. Therapy was instituted with ampicillin; and when gram-positive cocci were recognized in a direct smear of the purulent wound drainage, massive doses of penicillin G were added to the ampicillin therapy. The patient developed an extensive cellulitis of the wound with involvement of the entire scrotum and subsequent sloughing of some of the skin in this area. Blood culture, as well as cultures from the wound, revealed a tetracycline-resistant Group A β-hemolytic streptococcus which subsequently was identified as Group A, T type 9. The patient's clinical response was satisfactory, although the soft tissues in the scrotal area were very slow in healing.

Case No. 6: A one-year-old girl with burns on the right arm and right hand and a temerature of 104 F was admitted to the hospital on May 20, 1966, primarily because the admitting physician suspected bronchitis. The burns of the right arm and hand had occurred ten days prior to admission, and the patient been seen in the Emergency Room four days prior to this admission. At that time the burns were treated by one of the two surgical residents who had contact with many of the other patients in this outbreak. No antibiotic therapy had been instituted prior to admission to the hospital. Cultures taken from the burn wounds at the time of admission revealed a tetracycline-resistant Group A β-streptococcus which subsequently was identified as T type 9. The child was treated with oral penicillin and improved rapidly.

Case No. 7: A six-year-old boy was admitted for repair of an umbilical hernia on July 6, 1966. The uneventful operative procedure was carried out on July 7, 1966; however, 12 hours after surgery the child's temperature was reported to be 102 F. Except for lethargy, there were no other positive findings at that time; but on the first postoperative day the wound obviously was infected. Incision and drainage was carried out; this revealed purulent material from which was cultured a tetracycline-resistant Group A streptococcus subsequently identified as T type 9. The patient was treated with procaine penicillin and made an uneventful recovery.

Case No. 8: A 54-year-old man was admitted to the hospital on August 1, 1966. A thoracic duct ligation was performed under local anesthesia on August 22, 1966, and the patient began to have fever on the first postoperative day with the temperature going as high as 104 F. Drainage from the wound began on the second postoperative day and culture revealed a Group A β-streptococcus resistant to tetracycline. Typing of this strain of streptococcus was not carried out. The patient was treated with oral dicloxacillin and made an uneventful recovery.

Case No. 9: An 18-year-old man, a patient with hereditary spherocytosis with splenomegaly was admitted to the hospital on September 5, 1966. Uneventful splenectomy was carried out on September 13, 1966, and the patient began to have fever on the first postoperative day. On the third postoperative day the wound was noted to be indurated and swollen, and an aspiration of the wound was carried out revealing purulent material which, on culture, grew a Group A β-streptococcus resistant to tetracycline, subsequently identified as T type 9. The patient was treated with ampicillin and made a slow, satisfactory recovery.

Epidemiology

The epidemiologic pattern of this outbreak is somewhat uncertain for the following reasons:

1. Since the probable index case was not admitted and not attended by any house officers, the significance of the positive blood culture was not heeded at that time.

2. There was a lapse of twelve weeks before the next observed case; thereafter, eight cases occurred in a period of 21 weeks, and it became apparent that an outbreak had occurred.

3. Cultures of the upper respiratory tract of personnel in contact with these patients were all negative for Group A β-hemolytic streptococci.

4. Although two of the surgical residents had known close contact with eight of the

nine patients, neither had attended the index case; furthermore, both of these residents had several negative cultures for Group A streptococci.

We are certain that this outbreak represents nosocomial infection but must conclude that the identity of the actual source or carrier of the infection remains unknown. Because of the rapid (1-2 days) onset of symptoms postoperatively in these seven patients who developed infection following surgery, it would appear that the infection was seeded at the time of operation; furthermore, the short (1 day) preoperative stay of five of these seven patients did not appear to afford exposure to the hospital environment sufficient to establish a carrier state.

Bacteriology

Swabs from suppurating wounds or respiratory secretions were plated to trypticase soy agar plates with 5 per cent human or sheep blood and incubated overnight in a candle jar. Strains showing either surface or subsurface hemolysis were subcultured to fresh blood agar plates and disked with bacitracin (BBL Taxo A), penicillin, and tetracycline filter paper discs. All strains uniformly exhibited large (15 mm or greater in diameter) zones of inhibition with the 0.02-unit bacitracin and 2-unit penicillin discs, and no zones with the 5-microgram tetracycline discs. The isolates from the two patients with positive blood cultures were handled in a similar manner.

All strains were referred to the Staphylococcus and Streptococcus Unit of the National Communicable Disease Center for serological characterization. Dr. Moody reported on all eight strains as β-hemolytic streptococcus, Group A, not typable with the 44 M-precipitin antisera, but positive for T-agglutination type 9.*

Summary and Conclusions

It seems worthwhile to call attention to these occasional outbreaks of hospital-associated streptococcal infection. There is no question in light of the recent increase in staphylococcal and gram-negative rod nosocomial infections that one loses sight of the historical significance of the β-hemolytic streptococcus as the most important cause of wound infection and purpural sepsis in the pre-antibiotic era. The fact that the streptococcus is so susceptible to antibiotic therapy has led undoubtedly to a false sense of security concerning infections with this microorganism. In the outbreak reported here the attending physicians did not at any time suspect the streptococcus as the primary pathogen; proper treatment, therefore, was seldom initiated early in the course of the disease. It is conceivable that a gram-stain of a direct smear of exudate done immediately upon detection of the infection would have resulted in at least a suspicion that the infection could be due to streptococcus.

In two instances the initial therapy included a tetracycline antibiotic; the failure of response probably was due to the fact that this organism was resistant to the agent. In all cases recovery resulted from the utilization of penicillin G or a semi-synthetic penicillin in adequate clinical dosage. Fortunately, all patients survived. Penicillin G is the treatment of choice in patients infected with Group A streptococcus, but in those patients with a history of penicillin allergy, erythromycin and lincomycin may be substituted.

In the present study the importance of the T-agglutination test as an epidmiological tool has been demonstrated. Once exposed to such an outbreak as herein described, the clinician should be alert to the possibility of the Group A β-hemolytic streptococcus as a cause of hospital-associated disease.

REFERENCES

1. Roundtree, P. M.: Streptococcus Pyogenes Infections in a Hospital, Lancet 2: 172-173, 1955.
2. Roundtree, P. M., and Bulteau, V. G.: Hospital Infection with Tetracycline Resistant Hemolytic Streptococci, Medical Journal of Australia 2: 446-448, 1965.
3. Quinn, R. W., and Hillman, J. W.: An Epidemic of Streptococcal Wound Infection, Archives Environmental Health 11: 28-33, 1965.
4. Altemeier, W. A., Todd, J. C., and Inge, W. W.: Newer Aspects of Septicemia in Surgical Patients, Archives Surgery 92: 566-572, 1966.
5. Moody, M. D., Padula, J., Lizana, D. and Hall, C. T.: Epidemiologic Characterization of Group A Streptococci by T-Agglutination and M-Precipitation Tests in the Public Health Laboratory, Health Laboratory Science 2: 149-162, 1965.

---

*In a report by Moody et al[5] on the usefulness of T-typing to supplement M-typing of Group A streptococci, it was indicated that 88 per cent of the strains were T-typable while only 47 per cent were M-typable. Using both tests in conjunction, 92 per cent of Group A streptococci were typable.

HIRSUTISM: Diagnosis and Management

• Three cases of hirsute women are presented and the principles of clinical evaluation discussed.

Bernadine Z. Paulshock, M.D.

Specific diagnostic classification of the woman whose chief complaint is hirsutism is often difficult. Obesity and menstrual disorders are commonly associated complaints and obesity itself is often associated with oligomenorrhea and elevation of urinary 17-hydroxycorticoids (17-OHCS).[1] Although Cushing's disease is frequently considered, it is relatively rarely diagnosed even in centers where many such patients are referred.[2] Even when the ovaries of such patients are visualized, a definitive diagnosis of polycystic ovarian change can be made in fewer than one-third.[3]

The diagnostic evaluation of hirsutism is in actuality a clinical exercise in applied physiology. Simply stated, the tests measure basal secretion of hormones, determine their production or overproduction in response to stimulation by tropic hormone, and evaluate the suppressibility of the feed-back system. The diagnostic protocol has recently been amplified by the demonstration that this type of testing is applicable to the evaluation of ovarian as well as adrenal hormone output.[4] A schematic representation of these biologic manipulations is presented in Figure 1 in which the adrenal and ovarian symbols represent the relative contributions of each to the urinary hormone pool; the direction of the altered output of each during the different test situations is indicated by the increased or decreased size of the two symbols.

Although the culprit hormone being excessively produced in female hirsutism is probably testosterone, testosterone assay is so complex and therefore so expensive that it is available in very few clinical laboratories and urinary 17-ketosteroids (17-KS) are more usually measured. However, it must be remembered that testosterone is such a potent androgen that biologically significant testosterone elevation may not cause detectable change in urinary 17-KS.[5] This is hardly surprising in view of the low levels of testosterone normally circulating; usual plasma testosterone concentration in normal males ranges from 0.3 to 1.0 micrograms per cent and in normal females is less than 0.1 micrograms per cent. Fortunately, most of the significant abnormalities of the adrenal gland which are responsible for hirsutism (virilizing adrenal hyperplasia, adrenal cortical carcinoma or adenoma) will be associated with elevated 17-KS and/or elevated urinary 17-OHCS. The determination of 17-KS plus the determination of 17-OHCS if any endocrine stigmata other than hirsutism are present remain diagnostic mainstays.

In order to elucidate the clinical application of the above principles three illustrative

---

Dr. Paulshock is an Associate in Medicine and Attending Physician, Endocrine and Metabolic Clinic, Wilmington Medical Center.

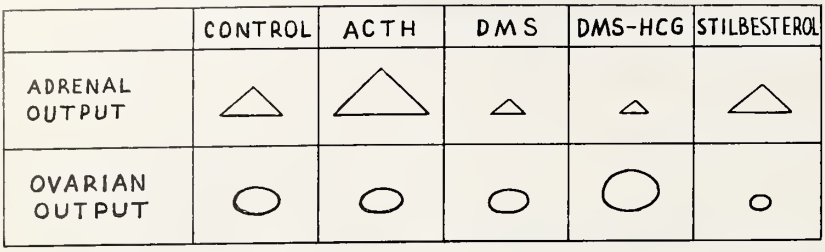


Figure 1

DMS=Dexamethasone
HCG=Human chronic gonadotropin

cases will be presented and discussed.

Patient 1 was first seen at the age of eighteen years at which time her weight was 205 lbs. She stated that she had always been overweight. Family history with respect to obesity includes her two siblings and mother and father, all overweight and all admittedly food enjoyers.

Menarche occurred at approximately age twelve but menses were always irregular with intervals as long as one year between menses which seldom occurred except after the administration of parenteral medication by the family physician. Hirsutism of her face began in her early teens with marked increase in the past several years. Past medical history is negative for illnesses other than noncomplicated children's diseases.

Physical Examination

Initial physical examination demonstrated an obese woman without plethora or striae. Blood pressure was within normal limits. Body and extremity hair were generally normal for a brunette. There was a small amount of peri-areolar hair and a moderate lower abdominal escutcheon. Facial hair was excessive, coarse in quality and chiefly present as sideburns and on the upper lip and along the jaw line, including the chin. There was no temporal recession of hair. Breasts were small but normal. Genital examination revealed normal external genitalia, the clitoris being top normal in size. Neither the uterine fundus nor any ovarian enlargement could be palpated.

Normal studies included protein-bound iodine level (PBI), feasting blood sugar, and hemogram. Urinary ketosteroids and corticosteroids were normal and suppressed normally after the administration of dexamethasone, 0.5 mg every six hours for eight doses. Skull x-ray and intravenous urogram were normal. The patient, who readily admitted to being an excessive eater, was encouraged to diet. Suppressive therapy was prescribed as prednisone, 2.5 mgs twice a day.

For the first several months no weight loss occurred. In fact, there was a weight gain of five pounds. After nearly one year of amenorrhea, progesterone was administered after which a profuse period associated with the first menstrual cramps the patient had ever experienced occurred. The same medication was administered again four weeks later resulting in a scanty period.

After six months the patient began assiduously to follow an 800-calorie diet. Within two months she had lost twenty pounds and her first spontaneous menses occurred. Within six more months she had lost fifty pounds. Her dress size decreased from 22½ to size 14 or 16. Spontaneous menses recurred at approximately six to eight week intervals. A regain of fifteen pounds occurred but the patient now weighs thirty-five pounds less than when first seen and has undergone successful electrolysis which removed most of her excessive facial hair resulting in marked cosmetic and psychologic improvement. No regrowth has been noted.

Results

Results of an extensive endocrinologic study are detailed in Figure 2. Six weeks after discontinuation of prednisone, baseline urinary steroid excretion was measured. Steroid excretion was again determined after intravenous ACTH and, following a rest interval, during the administration of dexamethasone. While dexamethasone was continued, HCG (human chorionic gonadotropin) was administered for three days and steroid excretion again determined. Finally, stilbesterol, 10 mg daily, was administered for one month and urinary steroids assayed once more.

FIGURE 2: Patient 1

	17-KS mg/day	17-OHCS mg/day
BASELINE	10.7	6.9
	9.6	6.4
ACTH	15.9	19.4
DMS*	6.7	0.27
DMS+HCG**	6.5	0.26
STILBESTEROL	8.4	4.7

*DMS=dexamethasone
**HCG=Human Chorionic Gonadotropin

Discussion

The studies reported above are expensive and time consuming and may even be misleading since 17-KS rather than testosterone itself was measured. From the data several observations may be made.

1. Control 17-KS and 17-OHCS were within normal limits and checked with each other on separate days.

2. Stimulation of the adrenal by ACTH caused less than a three-fold increase in 17-OHCS and an associated 50% increase in 17-KS, both normal responses.

3. During dexamethasone administration suppression of adrenal output of 17-OHCS was virtually complete and 17-KS decreased approximately 50%, a normal response.

4. Stimulation of the ovary by HCG (a preparation containing primarily LH type hormone as it is prepared from pregnancy urine) during continued adrenal suppression did not produce detectable change of 17-KS or 17-OHCS, suggesting an absence of unusual production by the ovaries of 17 Beta or 17-hydroxy steroid hormones in response to this tropic stimulation.

5. Suppression of endogenous ovarian tropin dan therefore endogenous ovarian steroids by high doses of stilbesterol produced only slight change in 17-KS. (17-OHCS may assume to have been artifactually affected because of elevation of plasma hormone binding proteins secondary to the administered estrogen.)

Prednisone suppressive therapy combined with aggressive encouragement to diet, and electrolytic removal of facial hirsutism appeared to be beneficial in this patient but the therapeutic importance of these respective therapies can not be separated. Spontaneous menses occurred sporadically but not regularly, but weight loss and prednisone therapy have been associated with restitution of cyclic bleeding.[6] No further progression of facial hirsutism has occurred nor regrowth post electrolysis. Because of the patient's concern with her menses as well as the most recent report suggesting better clinical effects on hirsutism from ovarian suppression than from adrenal suppression, she is presently taking cyclic courses of an estrogen-progestogen combination although there has been some problem with vaginal moniliasis.

Patient 2, twenty years old, was referred with the complaint of cosmetically unattractive hirsutism of her chest, neck, abdomen, and arms which developed about four years ago. She is not obese and not of swarthy coloring. Menarche occurred at age fourteen years; menses occur monthly at about thirty day intervals and occasionally are associated with mild cramps. Her mother, age 45 years, has a few stiff chin hairs and one of her mother's sisters is hirsute and has been told she has "an ovarian problem." The patient's father is "dark and hairy." Her 24 year old sister, her only sibling, has no problem with hirsutism.

Physical examination including pelvic examination was within normal limits except for hirsutism. The hirsutism was especially prominent in the peri-areolar distribution. There was a male-type abdominal escutcheon and scattered dark hairs over the abdomen, lower neck and midchest. Extremity hair was heavy for a generally fair female.

Her endocrinologic data, baseline and during dexamethasone administration, is summarized in Figure 3. Normal limits in our laboratory for 17-KS excretion by females are 6 - 14 mgs per day. Plasma testosterone,

FIGURE 3: Patient 2

	17-KS mg/day	17-OHCS mg/day
BASELINE	17.4	5.6
DMS	5.2	0.6

determined by New England Nuclear Laboratories, was 0.02 micrograms per cent (normal range 0.00 - 0.10 micrograms per cent).

Discussion

This young girl's hirsutism although well concealed by her clothes is of disturbing severity. She shows no physical evidence of virilism nor any other endocrinologic abnormality although her intermenstrual interval is slightly long and the intermittent occurrence of cramps probably denotes irregular ovulation. The ready suppressibility of her slightly elevated 17-KS suggests prednisone therapy to be appropriate but the long range improvement of hirsutism with this therapy is variably reported as occurring in only 16% to 50% of patients so treated.[6,7] She deserves continued re-examination including pelvic examinations.

Patient 3, a single 26 year old woman, has always been markedly overweight. Intermenstrual interval has been irregular since menarche with intervals of amenorrhea as long as four months but shorter during periods of weight loss. Weight loss has usually occurred after a summer of intense physical activity at camp and has been in the neighborhood of twenty to twenty-five pounds. Prominent hirsutism of her cheek, chin, and upper lip developed within the past several years. A schoolteacher and Girl Scout leader, she considers herself in excellent health. Her obesity is not of great concern to her but the hirsutism is annoying. Her mother had later life diabetes and facial hirsutism of a duration uncertain to the patient.

Physical examination in addition to obesity revealed moderate coarse hirsutism limited to her face. Pelvic examination was normal without clitoral enlargement. Blood pressure ranged from 160/100 to 140/180 mm Hg with most of the values being similar to the lower one. Normal intravenous pyelogram, chest, and skull x-rays were obtained, bone density being normal in all films. Endocrinologic studies included normal findings for resin sponge (*Triosorb*) T^3 I^{131} *test* (29.8%), PBI (5.2 micrograms per cent) and feasting blood sugar (83 mgs per cent). Glucose tolerance was slightly abnormal: one hour, 185 mgs per cent; 2 hours, 151 mgs per cent. Other endocrinologic studies are summarized in Figure 4. Baseline studies were normal. After ACTH, 17-OHCS more than tripled; 17-KS increased by 50%. Corticoid suppression after dexamethasone was good. Neither pregnanetriol nor plasma testosterone was elevated. Plasma cortisol at 5 PM declined less than the expected decrement (18.3 mcg. AM; 13.2 mcg, PM) but the absolute values were not abnormally elevated.

FIGURE 4: Patient 3

	17-KS mg/day	17-OHCS mg/day
BASELINE	5.6	5.8
ACTH	7.6	21.2
DMS	6.5	2.0

Discussion

This patient's studies suggested a slightly exaggerated response to ACTH stimulation and less diurnal variation in cortisol than is usually seen, although in our laboratory this procedure has not yet been proven fully reliable as a diagnostic test.[9] The diagnoses are thus best limited to obesity; diabetes mellitus, chemical; and idiopathic hirsutism. Continued follow-up with re-evaluation of urine and plasma corticoids is indicated. Although by a single determination her testosterone was not elevated, long periods of oligomenorrhea such as hers have been associated with production by the ovaries of increased amounts of androgen or androgen precursors.[8,10] Therapy with dexamethasone over a period of six months did not increase the frequency of spontaneous menses so ovarian suppressive therapy (Ortho-Novum) has been added to the regimen of prednisone, 2.5 mg twice a day.

Conclusion

The laboratory evaluation of hirsutism is complicated by the uncertainty as to what the actual hair growing hormone or hormones may be. Clinical hirsutism is commonly associated with obesity and amenorrhea but the primary and secondary inter-relationships of these associations are still unclear. Suppression of the ACTH-adrenal axis by the administration of prednisone is frequently effective in regularizing menses but less effective in decreasing hair growth. The weight loss which commonly occurs when an intensive therapeutic relationship is achieved can not be discounted in its possible effect on internal endocrine homeostasis.

REFERENCES

1. Dunkelman, S. S. et al: Cortisol Metabolism in Obesity, J. Clin. Endocr. 24:832, 1964.
2. Nugent, C. A. et al: Probability theory in the diagnosis of Cushing's syndrome, J. Clin. Endocr. 24:621, 1964.
3. Wieland, R. G. et al: Studies of female hirsutism, Am. J. Med. 41:927, 1966.
4. Lloyd, C. W. et al: Plasma testosterone in hirsute women, J. Clin. Endoc. 20:314, 1966.
5. Forbes, A. P.: Hypertrichosis, N.E.J.M. 273:602, 1965.
6. Nichols, T. et al: Glucocorticoid suppression of urinary testosterone excretion in patients with idiopathic hirsutism, J. Clin. Endoc. 26:79, 1966.
7. Casey, J. H. et al: Treatment of hirsutism by adrenal and ovarian suppression, J. Clin. Endoc. 26:1370, 1966.
8. Richardson, G. S.: Ovarian Physiology, N.E.J.M. 274:1008, 1966.
9. Paulshock, B. Z.: Plasma cortisol; an evaluation of recent experience, Del. Med. J. 38:295, 1966.
10. Korenman, S. G. et al: Testosterone production in normal and virilized women and in women with the Stein-Levanthal syndrome or idiopathic hirsutism, J. Clin. Endoc. 25:798, 1965.

AMERICAN COLLEGE OF PHYSICIANS

The November meetings sponsored by the ACP in their scientific regional program will be held at the following locations:

Upstate New York Regional, Syracuse, Nov. 3-4. INFO: Paul A. Bunn, M.D., 750 E. Adams St., Syracuse, N. Y.

New Jersey Regional, Atlantic City, Nov. 4-5. INFO: James F. Gleason, M.D., 7 S. Oxford Ave., Atlantic City, N. J.

ACP COURSE

Duke University Medical Center, Division of Neurology, Durham, N. C., *Neurologic Aspects of Internal Medicine;* for information write: Edward C. Rosenow, Jr., M.D., Exec. Dir. ACP, 4200 Pine St., Phila., Pa. 19104.

MEDICAL SEMINARS OF THE MEDICAL SOCIETY OF DELAWARE

These seminars will be held at the Milford Memorial Hospital from noon to 1 p.m. on the second and third Thursdays of each month.

Nov. 9, 1967: Ernest C. Shortliffe, M.D., *Wilmington Medical Facilities.* A discussion of the expansion plans of the Wilmington Medical Center which will be available to all practitioners in the State of Delaware.

Nov. 16, 1967: Richard Lennihan, M.D., *Cardiovascular Surgery.* An outline of the treatment of the most commonly found surgically correctable cardiovascular lesions; their diagnosis and treatment in the general hospital today.

SPEAKERS ON "ASK THE DOCTOR"

Speakers for November, 1967, on the Tuesday Radio Program, (11:05 a.m., WDEL) produced by the Medical Society of Delaware are: Nov. 7, Edgar N. Johnson, M.D., *Surgery of Deafness;* Nov. 14, Charles S. Riegel, M.D., *Diabetes;* Nov. 21, Bernadine Z. Paulshock, M.D., *Thyroid Hormone — Facts and Fancies;* Nov. 28, Carl I. Glassman, M.D., *Gall Bladder Disease.*

THE APPLICATION OF GAS CHROMATOGRAPHY TO PULMONARY FUNCTION TESTING

A Simplified Method of Analysis of

James M. Hofford, M.D.
Howard P. Angstadt, Ph. D.

The usefulness of the gas chromatograph in biomedical and especially cardiopulmonary laboratories for simplified analyses of respiratory gases is stressed. Practical points relative to the simplified operation of a gas chromatograph for oxygen, carbon dioxide and nitrogen analyses are presented. Some of the accessory instrumentation previously thought to be necessary can be eliminated by following these principles. The first point stresses the importance of carefully determining the sample volume that allows a linear response. The volumes are much smaller than previous reports would suggest. The second deals with the use of the gas tight syringe as the best method of sample introduction. The analytical results obtained with the gas chromatograph approach those obtained with the Scholander and VanSlyke instruments used as standards of reference.

The use of a gas chromatograph for the measurement of respiratory gases in pulmonary research is not new. Jay and Wilson[1] and Hamilton et al[2,3] have adequately established that one can achieve the same precision with this instrument as with the classical Van-Slyke and Scholander methods. In order to achieve this degree of exactness, these research groups employed gas sampling valves, measured integrated recorder peak areas, or developed an elegant instrument for measuring very large peak heights without loss of sensitivity, referred to as a zero suppression selector.[4] We have been able to approximate the precision and accuracy of the classical methods by means of more simplified equipment such as a gas tight syringe and direct measurement of unaltered recorder peak heights. The preciseness of such measurements will be shown to be more than adequate for routine respiratory gas analysis and, indeed, this method possesses certain advantages which recommend its use.

The purpose of this paper is to emphasize two factors that we have found essential for the simplified operation of this useful instrument. The first deals with the effect of sample size on linearity. The second factor is the use of a gas tight syringe to inject the unusually small samples necessary to maintain linearity.

Methods

The theoretical foundations of gas chromatography have been amply discussed in the literature.[5] The instrument in use in our laboratory is an F & M Model 720* dual col-

---

Dr. Hofford is Director, Pulmonary Function Laboratory, Wilmington Medical Center; Dr. Angstadt is Research Chemist, Research and Development Division, Sun Oil Company, Marcus Hook, Pa.

*Manufactured by F and M Scientific Corporation, Rt. 41 and Starr Road, Avondale, Pennsylvania.

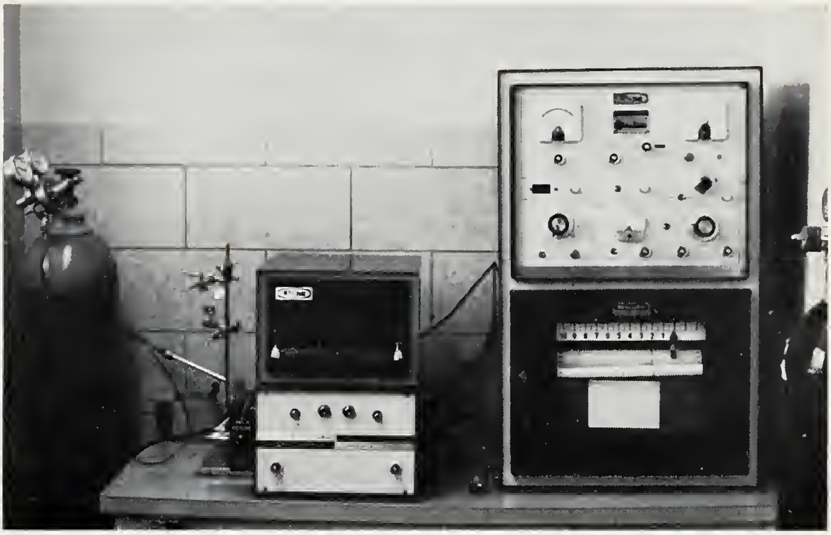


Figure 1
A complete gas chromatograph. The helium tank is on the left. The center unit contains the oven, columns and detector. On the right is the control panel and recorder.

umn chromatograph utilizing thermal detectors coupled to a Honeywell* eleven inch strip chart recorder (Figure 1).

Oxygen and nitrogen were partitioned with a column prepared by packing a 6′ by ¼″ O.D. stainless steel tube with 13X molecular sieve. A similar column 6″ long packed with activated charcoal separated carbon dioxide from the other gases. Helium was used as the carrier gas at a flow rate of 60 cc per minute. The specific operating conditions were: a column temperature of 70 C, detector temperature of 200 C, injection port at room temperature and a detector current of 150 ma. Samples were injected into the appropriate column through a rubber septum by means of a Hamilton teflon tipped gas tight syringe equipped with a Chaney adapter.** The septum in the chromatograph must be changed after 20 to 30 injections if reproducibility is to be maintained (Figure 2).

All samples were dried prior to analysis and the standard gases were assumed to be dry. Peak heights were measured directly from the chart paper. The recorder has an attenuator that is used to keep the response on scale.

Results

In Table 1 the concentrations of the individual gases were varied while the sample volumes were held constant for each comparative analysis. This excludes any significant effect due to variation in injection rate associated with different sample sizes.

In general, a graph plotting concentration of the pure gas and recorder response will show that the maximum volume of pure gas allowing a linear response is approximately 0.05 cc of oxygen and 0.1 cc for nitrogen. Carbon dioxide is linear up to 0.323 cc and was not tested above that volume since all of the analyses done in our laboratory are below that total volume for carbon dioxide.

The precision which one can obtain using this simple equipment with a minimal amount of experience is illustrated in Table 2. These data are taken from a typical sample of expired gas. Ten or more aliquots were analyzed by both the chromatograph and the standard Scholander or VanSlyke methods. These results show that carbon dioxide can be analyzed with the same precision as with the Scholander technique. Nitrogen and oxygen analyses are only slightly less reproducible than when determined by the Scholander and VanSlyke methods.

We have assessed the accuracy of our clin-

---

*Manufactured by the Honeywell Company, 3345 West Hunting Park Avenue, Philadelphia, Pennsylvania.

**Manufactured by the Hamilton Company, Inc., Whittier, Calif.

TABLE 1

GAS VOLUME AND RECORDER RESPONSE

Gas %	Pure Gas C C	Sample Size C C	Measured Peak Height Chart Units	Theoretical Peak Height Chart Units
2.29 % N_2	0.0115	0.5	38.	—
35.3 % N_2	0.1765	0.5	554.	586.
93.5 % N_2	0.4675	0.5	1254.	1550.
3.03 % CO_2	0.152	5.0	314.	—
5.95 % CO_2	0.298	5.0	610.	616.
6.45 % CO_2	0.323	5.0	682.	670.
17.1 % O_2	0.0513	0.3	313.	—
64.7 % O_2	0.1941	0.3	1060.	1185.

TABLE 2

COMPARATIVE PRECISION AND ACCURACY

	Chromatograph			Scholander		VanSlyke
Sample	O_2%	CO_2%	N_2%	O_2%	CO_2%	N_2%
1	17.11	3.57	4.47	17.30	3.66	4.51
2	17.30	3.59	4.55	17.24	3.69	4.51
3	17.17	3.57	4.39	17.26	3.69	4.48
4	17.07	3.51	4.27	17.20	3.62	4.46
5	17.17	3.53	4.30	17.27	3.68	4.70
6	17.11	3.54	4.54	17.22	3.58	4.55
7	16.92	3.53	4.62	17.25	6.64	4.43
8	17.15	3.54	4.47	17.30	3.58	4.45
9	17.15	3.56	4.47	17.34	3.63	4.45
10	16.83	3.59	4.37	17.25	3.64	4.43
11			4.35			4.42
12			4.40			4.55
13			4.42			4.52
14			4.34			4.47
15			4.30			4.44
Average	17.23	3.55	4.43	17.26	3.64	4.49
Average Deviation	± 0.08	± 0.02	± 0.08	± 0.03	± 0.03	± 0.05
Standard Deviation	0.1	0.03	0.10	0.04	0.04	0.07
% Variation	± 0.4	± 0.6	± 2	± 0.2	± 0.8	± 1

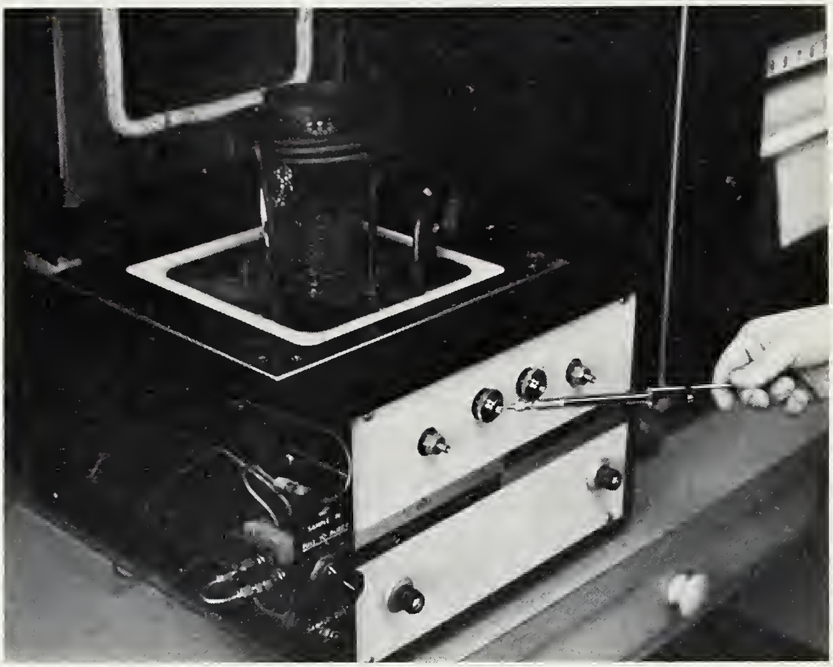


Figure 2

The oven lid is open. The columns are visible. The syringe is at the injection port where the sample can be injected through a rubber septum. On the left hand corner of the unit is the gas sampling valve that requires larger sample volumes.

ical technique by using the values obtained by the Scholander and VanSlyke as standards of reference. Table 2 shows the chromatographic analyses to be essentially as accurate as the VanSlyke method for nitrogen and to differ from the Scholander analyses for oxygen and carbon dioxide by only a few hundredths volume percent.

The 13X molecular sieve column used in the oxygen analysis will not separate oxygen from argon and thus a correction factor must be subtracted from the measured oxygen peak height because of the additive effect of argon. We have followed the method of correction suggested by Hamilton and Kory.[2] Correction factors must be obtained separately for room air and expired air because of the concentrating effect of respiration on the volume of exhaled gases. For our instrument, analyses over a period of one year indicate an argon correction factor of 1.8% of the measured oxygen peak for oxygen in room air and in the case of expired air it is 0.79% of the simultaneously measured nitrogen peak.

Calculations for oxygen are made as shown in equation (1). Carbon dioxide and nitrogen are calculated in the same manner except there is no argon correction factor.

A single oxygen analysis requires 1 minute 20 seconds, nitrogen requires 2 minutes 20 seconds, and carbon dioxide requires 1 minute.

Discussion

The gas chromatograph has many advantages that recommend it for us not only as a research instrument, but also as a routine analytical tool. The gas chromatograph has been shown to possess a high degree of accuracy and precision using the method described. The key to simplified operation lies in the direct measurement of recorded peak height which will vary linearly with the concentration of the gas being analyzed if proper sample size for each gas is used. We were quite surprised to find that with our chromatograph the response is not linear if samples contain more than 0.05 cc of pure oxygen or 0.1 cc of pure nitrogen. These sample volumes are considerably smaller than those

$$(1)\quad \%\ O_2\ \text{unknown} = \frac{\text{Unknown } O_2 \text{ peak height} - \text{argon correction}}{\text{Peak height of standard } O_2} \times \%\ \text{standard } O_2$$

frequently encountered in the literature concerning the analyses of these gases. The volume of each gas being measured is independent of the other gases in the sample.

Previous authors have used larger sample volumes injected by means of a gas sampling valve. The use of larger samples accounts for their need to integrate peaks or use a zero suppression selector. The gas sampling valve requires 10 to 30 cc of gas to flush its dead space and the volume to be injected cannot be varied nearly as easily as with the syringe.

The use of a gas tight syringe has not been mentioned in other articles dealing with biomedical application of the chromatograph. A 1 cc gas tight syringe requires less than 1 cc of gas for flushing the dead space in the syringe. This factor extends the utility of the instrument to situations where only very small sample volumes are obtainable. The syringe should be equipped with a Chaney adapter since it allows the easy introduction of constant sample volumes without tedious measurement. The method presented for analysis is based on using the same sample volume for standard and unknown gases. The total volume used must be determined for each analysis. In general, in the usual cardiopulmonary analyses involving oxygen, nitrogen or carbon dioxide, it is not necessary to use total sample volumes above 0.3 cc. The injection of such small samples is easy and extremely rapid with the 1 cc syringe and this is a factor that helps make peak height measurements sufficient.

We have shown that the chromatograph method approximates the precision of the Scholander and VanSlyke methods for carbon dioxide and nitrogen. The precision for oxygen is not equal to the Scholander but is still more than adequate for most analyses performed in a cardiopulmonary laboratory.

The application of the method outlined should assist others in the cardiopulmonary or biomedical laboratory to adapt the gas chromatograph to their needs. The principles described would apply to other gases.

Minimal technical experience is required to operate the instrument and, once established, the chromatograph is almost maintenance free. The instrument can easily be adapted to measure other gases of interest.[6,7] The simplicity of operation of this instrument should encourage more widespread application in the biomedical field.

REFERENCES

1. Jay, B. E. and Wilson, R. H.: Adaptation of The Gas Adsorption Chromatographic Technique For Use In Respiratory Physiology, J. Appl. Physiol., 5:298. 1960.
2. Hamilton, L. H. and Kory, R. C.: Application Of Gas Chromatography To Respiratory Gas Analysis, J. Appl. Physiol., 15: 829, 1960.
3. Hamilton, L. H., Smith, J. R. and Kory, R. C. :The Use Of Gas Chromatography In The Cardiopulmonary Laboratory, The American Journal Of Medical Electronics, 3:3, 1964.
4. Hamilton, L. H.: Range Selector To Improve Peak Height Measurements In Gas Chromatography, J. Appl. Physiol., 16:571, 1961.
5. Burchfield, H. P. and Storrs, E. E.: Biochemical Applications Of Gas Chromatography. New York, N. Y., 1962. New York Academic Press Inc., Publisher.
6. Smith, R. and Hamilton, L. H.: DLco Measurements With Gas Chromatography, J. Appl. Physiol., 17:856, 1962.
7. Lawson, W. H., Jr., and Johnson, R. L., Jr.: Gas Chromatography In Measuring Pulmonary Blood Flow And Diffusing Capacity, J. Appl. Physiol., 17:143, 1962.

ACKNOWLEDGEMENTS

Appreciation is expressed to Mrs. Nancy Gerkin for skillful technical assistance.

Supported by grants from the Delaware Tuberculosis & Health Society.

Analysis of Respiratory Gases in Blood

- **Multiple samples of gases extracted from 1 ml of blood can be analyzed combining the use of a gas tight syringe, VanSlyke volumetric apparatus, and the gas chromatograph.**

James M. Hofford, M.D.

The present method of analysis is presented as a new and different way to measure respiratory gases in blood. The gas chromatograph has been used to measure oxygen, carbon dioxide and nitrogen in gas samples[1] and a method for determining oxygen in blood has been described.[2,3]

The gases oxygen, carbon dioxide and nitrogen were liberated from 1 ml of whole blood in a standard volumetric VanSlyke apparatus

TABLE I

	Chromatograph			Manometric VanSlyke	
	Nitrogen %	Oxygen %	Carbon Dioxide %	Oxygen %	Carbon Dioxide %
	1.64	17.4	53.7	17.6	54.0
	1.66	17.2	54.0	17.6	53.1
	1.72	16.9	53.3	17.6	54.6
	1.75	17.5	52.6	17.5	54.3
	1.78	16.8	53.4	17.4	54.6
	1.85	16.5	53.4	17.2	54.5
Average	1.73	17.1	54.1	17.5	54.2
Average Deviation	±0.06	±0.32	± 0.7	± 0.12	± 0.4

Comparative analyses of oxygen, carbon dioxide and nitrogen using the gas chromatograph and manometric VanSlyke techniques.

with 2.5 ml of a standard acid saponin ferricyanide solution according to VanSlyke.[4] The blood and solutions are introduced anaerobically and the mixture is agitated under vacuum for 3 minutes. The total volume of gas extracted from the blood is measured at atmospheric pressure. The waste arm of the VanSlyke had previously been filled with mercury and covered with a serum cap. The leveling bulb is put at a height necessary to balance the column of liquid in the VanSlyke chamber when it finally reaches the top of the waste arm. The mercury is removed from the waste arm with a needle and syringe inserted through the serum cap as the upper stop cock is opened to the waste arm. A clean dry 1 ml gas tight syringe with Chaney adapter[5] set to measure 0.05 ml is inserted into the waste arm. Three 0.05 ml aliquots are taken and ejected to flush the dead space of the syringe. A fourth 0.05 ml is taken and promptly injected into the appropriate column on the gas chromatograph for oxygen, carbon dioxide or nitrogen analysis. An average of 3 or 4 samples can be analyzed from 1 cc of whole blood. The per cent of each gas in the total gas obtained from 1 ml of blood is determined by the chromatograph.

The calculation of each gas in volume % STPD is made according to the method of VanSlyke[6] using the corrected "i factor" 1.037 for carbon dioxide as explained by VanSlyke.[7]

The chromatograph in use in our laboratory utilizes a thermal detector coupled to an eleven inch strip chart recorder. Oxygen and nitrogen are partitioned on a 6′ x ¼″ molecular sieve column and carbon dioxide on a 6″ x ¼″ activated charcoal column. Helium is the carrier gas.

Peak heights used in calculation are measured from the chart paper. The detector response in terms of peak height varies linearly with concentration if the limit of sample volume is carefully determined. Using the present equipment we have determined that detector response is linear for samples containing under 0.05 ml of pure oxygen, 0.1 ml of pure nitrogen, and 0.3 ml of pure carbon dioxide. The individual gases are independent of other gases making up the total sample with respect to the chromatograph response.

Table I presents the comparative results of analyzing aliquots of the same blood sample with the chromatograph and manometric Van-

Slyke techniques. The results for carbon dioxide are quite comparable and the precision is quite good with each method. The values for nitrogen are average for human blood. The values for oxygen are comparable.

The chromatographic analysis of blood gases has several advantages. The technique can be carried out with a much less experienced technician than is required for the best manometric VanSlyke analyses. Additional gases such as nitrogen can simultaneously be determined. There is little instrument maintenance. Results are quickly obtained. After the gas has been extracted from blood it requires only 1 minute 20 seconds for an oxygen analysis, 2 minutes 20 seconds for nitrogen and 1 minute for carbon dioxide. The present method also saves time since three or four samples can be obtained for analysis from 1 ml of blood rather than the one sample allowed by previous methods.[1,2]

The use of the gas tight syringe is an important part of the present technique. Small samples of the order of 0.05 ml can be injected very rapidly with a 1 ml syringe and the speed of injection is quite reproducible. This is an important factor enabling us to use peak height measurements.

The present method should be adaptable to measuring other gases of interest, especially anesthetic gases, and gases in other biological fluids.

REFERENCES

1. Hamilton, L. H. and Kory, R. C.: J. Appl. Physiol. 15:829, 1960.
2. Ramsey, L. H.: Science, 129:900, 1959.
3. Lukas, D. S. and Ayres, S. M.: J. Appl. Physiol., 16:371, 1961,
4. Peters, J. P. and Van Slyke, D. D.: Quantitative Clinical Chemistry (Williams and Wilkins, Baltimore, Md., 1932).
5. Manufactured by The Hamilton Company, Inc., Whittier, Cal. fornia.
6. Van Slyke, D. D. and Stadie, W. E.: The Journal of Biological Chemistry, 49:1, 1921.
7. Van Slyke, D. D. and Sendroy, J., Jr.: The Journal of Biological Chemistry, 73:127, 1927.

Appreciation is expressed to Mrs. Nancy Gerkin for skillful technical assistance.
This work was supported by the Delaware Tuberculosis and Health Society.

ALBANY MEDICAL COLLEGE SEMINAR CRUISE

Reservations are now being accepted for the Ninth Medical Seminar Cruise, sponsored by the Albany Medical College, January 17 - February 1, 1968, aboard the ship "Raffaello" of the Italian Line. This cruise constitutes 24 hours of AAGP credit. For further information, write to: Dept. of Postgraduate Medicine, Albany Medical College, Albany, N. Y. 12208.

AMERICAN SOCIETY OF ANESTHESIOLOGISTS

Nov. 9-11 — *Fourth Annual Conference on Respiratory Therapy* — Statler Hilton Hotel, Boston.
Nov. 11-16 — *Thirteenth Annual Meeting* — American Association for Inhalation Therapy, Los Angeles.

COLLEGE OF SURGEONS

The International College of Surgeons' Western Regional Meeting will be held Nov. 19-22 at the Flamingo Hotel, Las Vegas, Nevada.

GENERAL PRACTITIONERS CONFERENCE

Temple University, Health Sciences Center, Department of Psychiatry, announces a Seminar on *Psychiatry* 1967 *for the General Practitioner* to be held Nov. 4-5 at the Marriott Motor Hotel, City Line Avenue, Phila., Pa.

ACUTE NON-SPECIFIC PERICARDITIS WITH TAMPONADE

Associated With Anticoagulants and Pericardiotomy

• This case report points out that anticoagulants are contraindicated in acute non-specific pericarditis, often confused with coronary thrombosis.

Marvin H. Dorph, M.D.

While acute non-specific pericarditis is usually a benign disease, occasionally hemorrhagic pericardial fluid has been demonstrated and two fatal cases[1,2] have been reported in which the use of anticoagulants has been a factor.

In non-specific pericarditis there is capillary proliferation and organization of fibrinous exudate on the epicardial and pericardial surfaces. Polymorphonuclear leukocyte infiltration of the myocardium adjacent to the epicardium has been described.[3,4] It therefore can be readily understood why intrapericardial hemorrhage might occur more frequently in the presence of anticoagulants. Reid et al,[9,10] placed emphasis on the fact that the effusion may be bloody after ten days of illness but is usually serous prior to that time. This is debatable since others have found serosanguinous effusion early in the disease.[5] The use of anticoagulants in such cases obviates the time factor concerning the nature of fluid.

The following is a case report to emphasize the value of surgery in pericardial tamponade and to point out the danger of anticoagulants in pericarditis.

Present Illness: This white man, age 57, was fairly well until September 14, 1957, when he developed severe anterior chest pain radiating down both arms for a period of twelve hours. Dyspnea then occurred but his pain diminished and he continued in this manner until he was seen on September 16, 1957. He was a painter and a heavy smoker; therefore, his dyspnea did not alarm him since it had been present previously many times. When seen, his blood pressure was 152/92 mm of Hg and the pulse was 96 per minute with some rales at both bases. There was some venous congestion of the neck vessels and evidence of cardiac enlargement and anterior chest soreness. An EKG (Fig. 1A) obtained at this time was normal; however, the chest x-ray (Fig. 2) revealed slight cardiomegaly with a configuration compatible with hypertension or arteriosclerotic cardiovascular disease, associated with a moderate degree of passive congestion and evidence compatible with biteral linear atelectasis or multiple small pulmonary infarcts.

Past History: The past history revealed an episode of angina two years before which was accompanied by a normal electrocardiogram. He also had an episode of angina one month prior which was relieved by nitrogly-

---

Dr. Dorph is Chief of Metabolic Services, Wilmington Medical Center; President of the Delaware Diabetes Association.

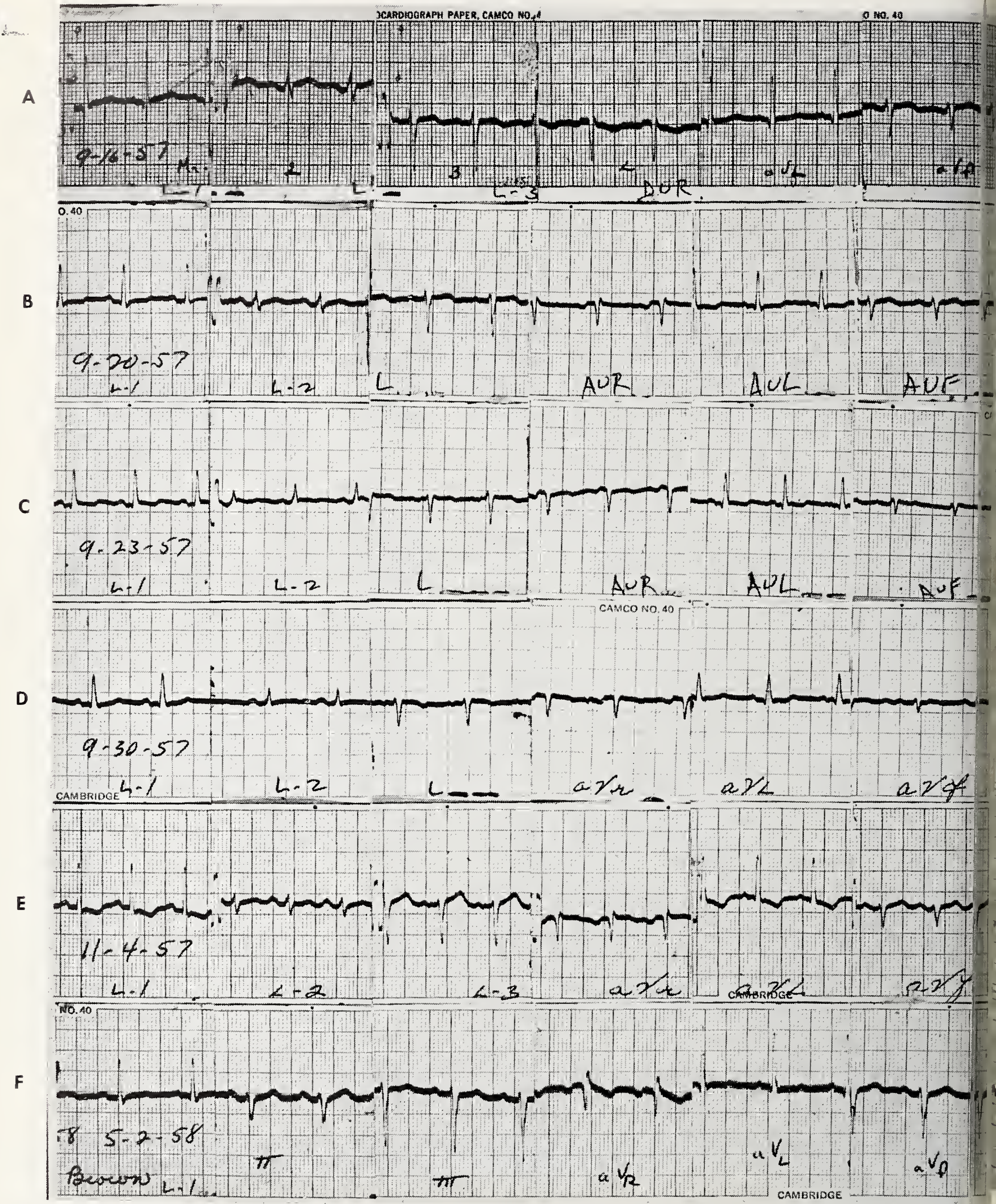


FIGURE 1 — LIMB LEADS

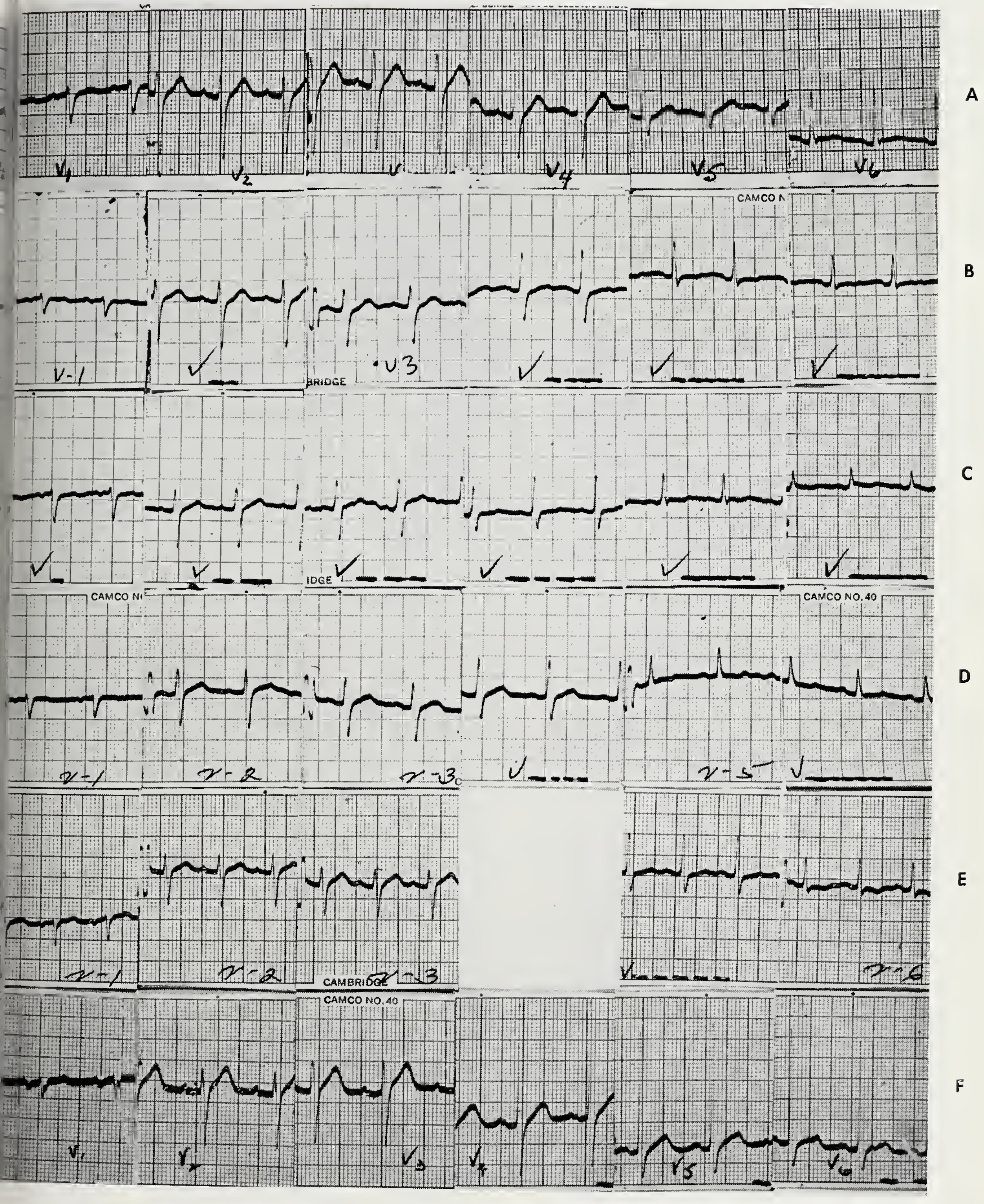


FIGURE 1 — CHEST LEADS

cerine. There was a history of asthmatic wheezing due to tobacco and bilateral bursitis of both shoulders, present for six years, and a left subscapular bursitis present for eight years.

On September 16, 1957, the patient was treated with digoxin and nitroglycerine and improved. On September 20, 1957, he again had severe anterior chest pain with marked sweating and radiation of the pain to the shoulders, neck, and arms. At this time he was admitted to the hospital.

Physical Examination: On admission the blood pressure was 132/84 mm of Hg; pulse 102 per minute; temperature 100 degrees Fahrenheit; respirations 26 per minute. The patient was a thin and well developed white man with obvious dyspnea and no cyanosis. He complained of severe anterior chest pain, particularly over the left chest and especially on deep inspiration. He was expectorating some yellow phlegm mixed with blood on admission; the head and neck examination otherwise was not remarkable. The lungs revealed rales at both bases and the heart sounds were good with a normal sinus rhythm and a Grade II systolic murmur at the apex, radiating to the aortic area. The abdomen and extremities were normal. He was placed in oxygen which seemed to help him greatly and was given sedation along with maintenance digoxin.

Laboratory Studies: On admission the hemoglobin was 13.4 grams; white blood count 6850 with 78% neutrophils, 17% lymphocytes, and 5% monocytes. The serum glutamic oxalacetic transaminase (SGOT) was 11.8 units; erythrocyte sedimentation rate 66 mm per hour (Westergren method). The cholesterol, prothrombin time, sugar, BUN, and urinalysis were normal. The electrocardiogram (Fig. 1B) was not much changed from the tracing of September 16, 1957. Re-examination of the chest by x-ray (Fig. 3) was essentially the same except for complete clearing of the previously visualized atelectatic areas. Anticoagulants were begun (Heparin and Dicumarol) because we believed he had an infarction with pulmonary emboli in spite of no change in the electrocardiogram. A culture of his sputum subsequently revealed a rare pneumococcus and an alpha and gamma streptococcus organism.

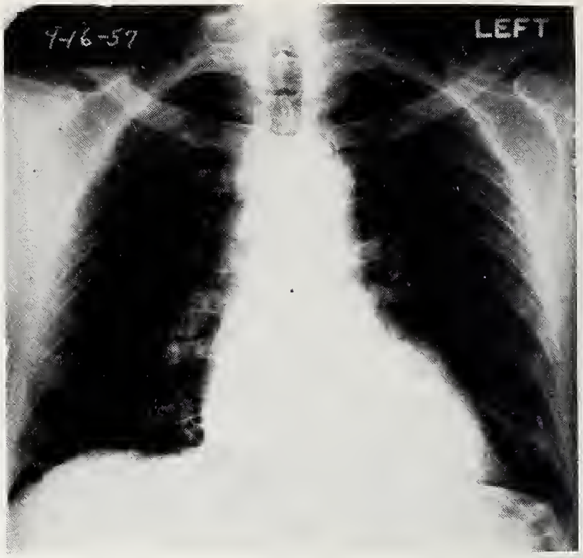


Figure 2

Hospital Course: On the second hospital day, the patient complained of excruciating pain in the left shoulder and pain in the chest on deep breathing. The x-ray of the shoulder was normal and a repeat chest x-ray was reported the same as mentioned above. The temperature was 102 degrees Fahrenheit; pulse 132 per minute; respirations 30 per minute; and the blood pressure 132/82 mm of Hg. On his third hospital day, his pulse was 150 per minute and thready, and his blood pressure average was 104/92 mm of Hg. The electrocardiogram (Fig. 1C) at this time showed slight S-T elevation in leads 1 and 2 and V5 and V6, suggesting pericarditis but because of his continued clinical picture, he was treated as a myocardial infarction. The patient was given levarterenol and intravenous fluids because of an obvious shock-like picture. This seemed to help him considerably. He had bouts of vomiting and continued with severe chest pain on the left side, and the prothrombin time was recorded as 23% of normal. Over the next few days, the patient was critically ill and was maintained on fluids intravenously. His blood pressure was maintained at a minimum of 110 mm

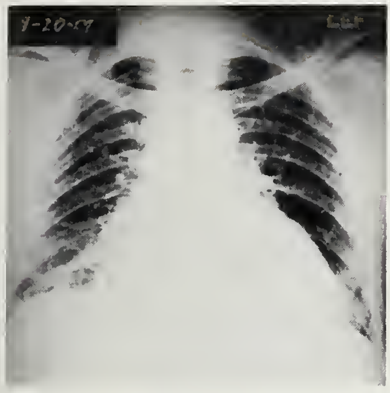


Figure 3

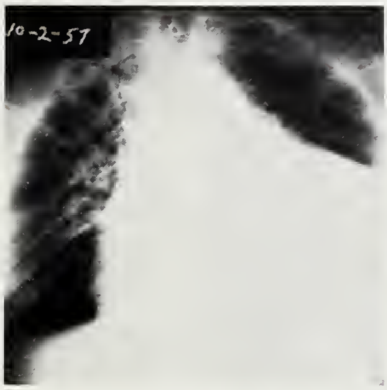


Figure 4

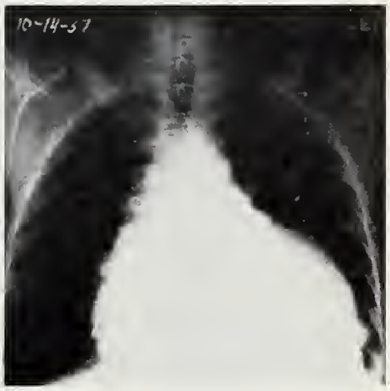


Figure 5

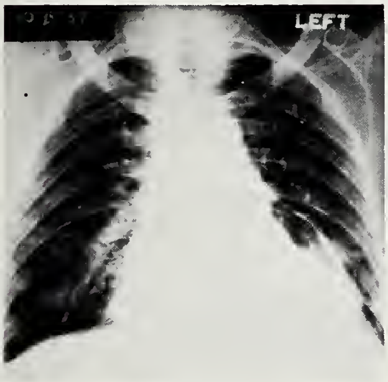


Figure 6

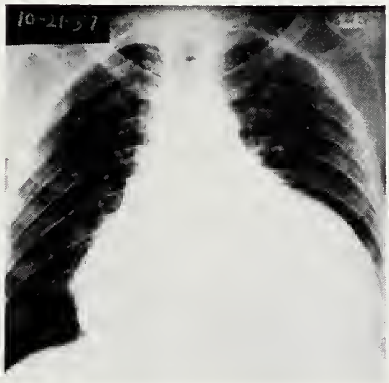


Figure 7

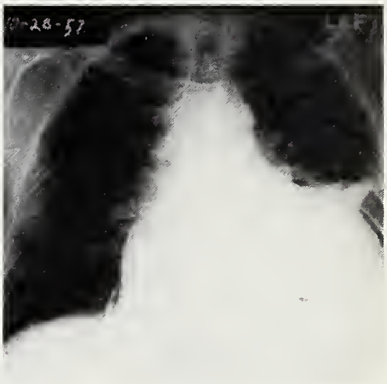


Figure 8

of Hg systolic with levarterenol. No Dicumarol was given over this period since his prothrombin time did not rise above 25% of normal. On the seventh hospital day, a definite pericardial friction rub was heard. Hist blood pressure was 106/92 mm of Hg with vasopressor drugs, and the heart sounds were distant with a pulse of 130 per minute. His prothrombin time was 17% of normal and within twenty-four hours, the vasopressor drugs were stopped and the patient seemed improved. A chest x-ray (Fig. 4) suggested pericardial effusion and the electrocardiogram (Fig. 1C) continued to show the same pattern. On the twelfth hospital day, the blood pressure was 124/72 mm of Hg and his heart sounds were distant while his chest x-ray showed a massive pericardial effusion but the patient felt better. However, he began passing blood in his urine (which we felt might be due to his catheter) and his prothrombin time was noted as 15% of normal. He also had pain in his liver area suggesting embolic phenomena. The question arose as to whether to stop the anticoagulants, but we felt his emboli might be responsible for all the above findings and, therefore, continued with Dicumarol. Within a few days, he passed a great deal more blood in his urine and Dicumarol was stopped on the sixteenth hospital day; at this time the erythrocyte sedimentation rate was 106 mm per hour; blood pressure 116/64 mm of Hg; pulse 88 per minute; and the temperature was 101 degrees Fahrenheit. Over the next week, the patient's pulse pressure began to decrease considerably (blood pressure 100/86 mm of Hg) and pulsus paradoxicus was noted with distention of the neck veins on inspiration. The patient was treated for a complicating urinary tract infection and improved on appropriate antibiotic therapy. The chest pain and signs of pericardial tamponade became so severe that pericardicentesis was performed on the

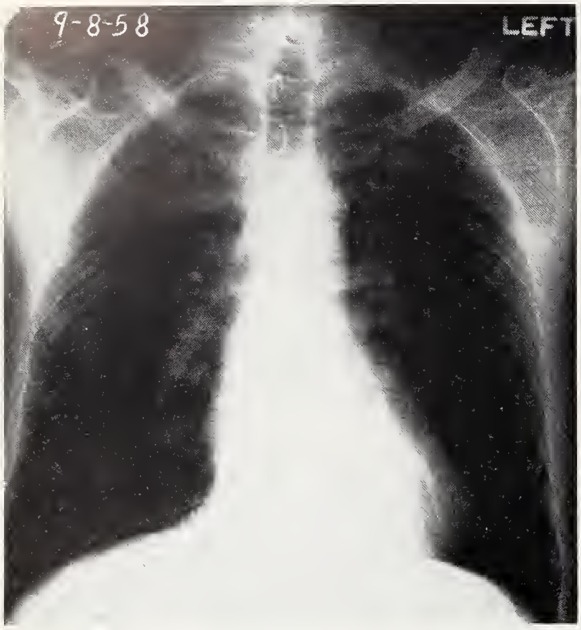


Figure 9

twenty-sixth hospital day and 800 cc of air was injected into the pericardial sac for a contract x-ray study (Fig. 5). The patient improved temporarily but soon appeared almost moribund with a rapid re-accumulation of fluid. This was noted by x-ray (Fig. 6) and the patient was tapped again within forty-eight hours and 400 cc of bloody fluid was obtained while the prothrombin time was noted to be 60% of normal. It was felt that the fluid was loculated (Fig. 7) because of his continued pericardial friction rub and the paucity of fluid obtained by aspiration. At this time it was felt that surgical intervention was necessary; therefore, he was tapped one more time with a yield of 500 cc of sero-sanguinous fluid and a pericardiopleural fenestration was performed on the thirty-fifth hospital day.

Pericardial-Pleural Fistula

Under endotracheal type of anesthesia, a pericardial-pleural fistula was established and all the sero-sanguinous fluid was expressed. There were many fibrinous adhesions and the entire heart was freed from the pericardium by the surgeon's finger. During surgery, the patient developed a widened QRS complex but this soon reverted after surgery and was followed by a complete AV block which likewise reverted to normal sinus rhythm the next day. The patient tolerated this procedure extremely well and within almost twenty-four hours, a widened pulse pressure, slowing of the pulse, and generally improved appearance of the patient was noted. The postoperative x-ray (Fig. 8) revealed fluid in the left chest along with an enlarged heart which gradually decreased in size. All the cultures of the pericardial fluid and tissue for acid-fast organisms and fungi were negative, and viral studies were reported as negative. Unfortunately the pericardial tissue examination was not too revealing, in spite of a review of the cell block. The patient was dicharged much improved on his forty-sixth hospital day.

As an out-patient, the patient continuously improved; one year later, he had gained twenty-five pounds of weight and his pulse was 76 per minute; blood pressure 124/72 mm of Hg, and he was now back at his job. A chest x-ray (Fig. 9) and electrocardiogram (Fig. 1E, 1F) were normal as well and he was seen again in 1962, doing extremely well and having no sequelae at all from this experience.

Discussion

Acute non-specific pericarditis is frequently confused with coronary thrombosis.[11,12,13,14] Anticoagulation is being used for the latter almost universally which emphasizes the need for prompt and accurate differential diagnosis. Goodman[1] reported a case of a 76-year old female who received anticoagulants because of suspected myocardial infarction and/or pulmonary emboli. She died on the fourteenth day of therapy. Post-mortem examination established a non-specific pericarditis with tamponade, and hemorrhage into the pericardial sac was massive. An earlier case of pericardial hemorrhage associated with anticoagulation therapy was reported by MacCord.[2] In his case, the patient was 52 years old and died on the sixteenth day, having received anticoagulants for suspected myocardial infarction. Autopsy revealed no infarction but established the diagnosis of diffuse pericarditis with hemopericardium. The patient had also developed shock and effusion on the fourteenth day.

Other fatal cases[10,15,16,17,18] of pericardial effusions have been reported but without anticoagulants as a contributory cause. Pericardicentesis[6,7,8] were used but pericardial fenestration procedures were not attempted.

In 1953, Yu et al[19] reported the successful use of pericardectomy in a 70-year old patient who had a pericardial effusion for one year. Williams,[20] in 1954, reported pericardial tamponade in seventeen cases, of which three had successful fenestration procedures performed. Many cases making use of surgical procedures have been reported[21,22,23,24] but the majority concern themselves with recurrent or longstanding effusions of the pericardium. Use of these surgical experiences was a deciding factor in our decision and we feel saved our patient's life.

Summary

This case report concerns a 57-year old white man who was treated as a coronary occlusion problem with anticoagulants. Events indicated that this patient was more probably a problem of pericarditis and necessitated a surgical pericardiopleural fistula operation to prevent the consequences of a serious cardiac tamponade. The patient survived, and EKG and x-ray findings are presented. This case report again points out that anticoagulants are contraindicated in acute non-specific pericarditis which is often mistakenly diagnosed as coronary thrombosis, and that pericardial fenestration can be life-saving when there is pericardial tamponade.

REFERENCES

1. Goodman, H. L.: Acute Non-specific Pericarditis with Cardiac Tamponade: A Fatal Case Associated with Anti-coagulant Therapy, Ann. Int. Med. 48:406, 1958.
2. MacCord, M. C., and Taguchi, J. T.: Non-specific Pericarditis, A Fatal Case, Arch. Int. Med. 87:727, 1951.
3. Zinsser, H. F.: Idiopathic Pericarditis, Mod. Concepts Cardiovas. Dis. 29:611, 1960.
4. Saphir, O.: Viral Myocarditis, Mod. Concepts Cardiovas. Dis. 18:43, 1949.
5. Williams, C. L. Jr., Beckwith, J. R., and Wood, J. E., Jr.: Hemorrhagic Pericardial Fluid in Acute Benign Non-specific Pericarditis: Report of a Case and Review of the Literature. Ann. Int. Med. 52:914. 1960.
6. Nathan, D. A., and Dathe, R. A.: Pericarditis with Effusion Following Infections of Upper Respiratory Tract, Am. Heart J., 31:115, 1946.
7. Sease, R. H., and Beckwith, J. R.: Acute Non-specific Pericarditis: Report of Five Cases, Virginia M. Month. 76:629, 1949.
8. Porter, W. B., Clark, O., and Porter, R. R.: Non-specific Benign Pericarditis, J.A.M.A., 144:749, 1950.
9. Reid, E. A. S., Hutchison, J. L., Price, J. D. E., and Smith R. L.: Idiopathic Pericarditis, Ann. Int. Med. 45:88, 1956.
10. Price, J. D. E., Hutchison, J. L., and Reid, E. A. S.: Benign Idiopathic Pericarditis: A Fatal Case with a Review of the Fatalities in the Literature. Am. Heart J. 51:628, 1956.
11. Durant, T. M.: Recognition of Pericardial Disease, Mod. Concepts Cardiovas. Dis., 27:455, 1958.
12. Barnes, A. R., and Burchell, H. B.: Acute Pericarditis Simulating Acute Coronary Occlusion: A Report of Fourteen Cases, Am. Heart J. 23:247, 1942.
13. McGuire, J., and others: Non-specific Pericarditis and Myocardial Infarction — Their differential diagnosis, Clinical Conference, Circulation 14:874, 1956.
14. Sodeman, W. A.: Recognition of Acute Pericarditis. J. Kentucky State M. Assoc., 58:333, 1960.
15. Case Records of the Massachusetts General Hospital No. 32181, New England J. Med. 234:608, 1946.
16. Sturgess, F., and Wilkins, J. F.: A Case of Latent Pericarditis and Sudden Death, Lancet 2:153, 1885.
17. Pomerance, M., Perchuk, E., and Hoffman, J. B.: Fatal Case of Idiopathic Pericarditis, New York State J. Med. 52:95, 1952.
18. Case Records of the Massachusetts General Hospital No. 44201, New England J. Med. 258:1004, 1958.
19. Yu, P. N. G., Lovejoy, F. W., Joos, H. A. Nye, R. E., and Simpson, J. H.: An Unusual Case of Massive Pericardial Effusion with Hemodynamic Studies, Ann., Int. Med. 39:928, 1953.
20. Williams, C., and Soutter, L.: Pericardial Tamponade: Diagnosis and Treatment, Arch. Int. Med. 94:571, 1954.
21. Barker, P., and Johnston, F.: Pericarditis with Effusion 2:134 1950.
22. Shumacker, H. B., Jr., and Jackson, H.: Pericardiectomy for Chronic Idiopathic Pericarditis with Massive Effusion and Cardiac Tamponade, Surg., Gyn. Ob. 103:535, 1956.
23. Rabiner, S. F., Spector, L. S., Ripstein, C. B., and Schlecker, A. A.: Chronic Constrictive Pericarditis as Sequel to Acute Benign Pericarditis, N. Eng. J. Med. 251:425, 1954.
24. Proudfit, W. L., and Effler, D. B.: Diagnosis and Treatment of Cardiac Pericarditis by Pericardial Biopsy, JAMA 161:188, 1956.

BIOMEDICAL COMMUNICATIONS

The U.S. Public Health Service, effective July 1, has created a consolidated biomedical communications program to speed transfer of research information to medical practitioners, by merging the National Medical Audio Visual Center into the National Library of Medicine. Complete biomedical information is available to researchers, clinicians, and educators, including the computer-based MEDLARS (Medical Literature, Anaylsis and Retrieval System), which provides bibliographic access to more than 500,000 articles in the world's biomedical journal literature.

● A discussion concerning etiology, cause of symptoms, treatment, and differential diagnosis is presented for three cases.

SPONTANEOUS HYPOGLYCEMIA

James F. Flanders, M.D.

Spontaneous hypoglycemia, as Conn has pointed out,[1] is merely a manifestation of an abnormality of glucose metabolism, which may be due to one of a variety of possible causes. A vast amount of literature on this subject has accumulated since Harris[2] in 1924 first noted a fairly characteristic group of symptoms occurring in patients when the blood sugar fell to hypoglycemic levels.

From 80 to 90 per cent of all cases of spontaneous hypoglycemia are due to three causes. They are: (1) functional hyperinsulinism; (2) organic hyperinsulism, and (3) hepatogenic hypoglycemia. Obviously a specific diagnosis is important, since therapy in each of these types is different. A diagnostic awareness of the possibility of spontaneous hypoglycemia is essential if the cause of the patient's symptoms is to be correctly diagnosed. Epilepsy, brain tumor, acute alcoholism, encephalitis, hysteria, tetany, cardiac neurosis, various psychoses, atypical angina pectoris and peptic ulcer are among the erroneous diagnoses which have been made in cases of spontaneous hypoglycemia. Proof that a group of symptoms complained of by the patient is related to an abnormally low level of blood sugar and that these symptoms may be quickly relieved by the ingestion or injection of glucose establishes only the nonspecific diagnosis of spontaneous hypoglycemia.

In differentiating functional hyperinsulism, which comprises 70 per cent of all cases of spontaneous hypoglycemia, from organic hyperinsulinism and hepatogenic hypoglycemia, the following studies are of greatest value: (1) the level of fasting blood sugar and blood insulin (a) on normal carbohydrate feeding and (b) on restriction of dietary carbohydrates or after a fasting period; (2) the 5 hour glucose tolerance curve and insulin levels after a standard dietary preparation; (3) the results of several tests of liver function; and (4) the history and clinical course of the disturbance. In hypoglycemia due to other causes, it may be helpful to utilize appropriate tests to rule out pituitary adrenal cortical insufficiency, the four hour ACTH test,[3] and an electroencephalogram.[4] Gorsuch and Rynearson[5] believe that the most important test in distinguishing severe hypoglycemia from the functional or nervous type is the prolonged fast, as few patients with hyperinsulinism can fast very long, particularly if exercise is employed. Patients with severe hyperinsulinism cannot fast longer than two or three hours. These same investigators, in reporting 85 cases of spontaneous hypoglycemia, noted that 41 cases were of functional origin, and of these only three experienced convulsions; each of

---

Dr. Flanders is Senior Member, Department of Medicine, Wilmington Medical Center.

these convulsive patients also had an associated epilepsy.

When the previous diet has been normal, depression of the pre-breakfast fasting blood sugar level below 50 mgm per cent means organic hypoglycemia with but few exceptions. Functional hyperinsulinism, on the other hand, is generally not associated with low fasting blood sugar levels.[6] Further, in both the main types of organic hypoglycemia (hyperinsulinism and liver disease) there is a marked tendency for the progression of symptoms. To the contrary, functional hyperinsulinism exhibits no tendency to become more severe.

The exact reason why symptoms appear in hypoglycemia are not fully understood at this time. However, all the symptoms appear to be encephalopathic in origin, and initiated by a depression of cortical functions.[7] The mere level of blood sugar does not appear to be the entire reason for symptoms, as a lack of correlation may be seen between the clinical and laboratory findings. The usual clinical symptoms may occur in the presence of a normal or elevated level of blood sugar, or may be absent when severely depressed levels are found. Thus, as Fineberg et al[7] have stated, it is obvious that the utilization of glucose by the brain cannot be measured by the actual amount of glucose in the blood stream because of a possible impairment of the mechanism of transference of glucose from blood to brain tissue, the inability of the cells to absorb adequate amounts of glucose transferred to them, or to utilize it properly on delivery.

Several Factors

Among several factors which may play a role in producing the symptoms of hypoglycemia, Fabrykant and Bruger[8] list the following: the rapidity of fall in the blood sugar as opposed to the level of blood sugar itself; a secondary release of epinephrine in hypoglycemia accounting for such symptoms as mydriasis tremor, tachycardia, etc.; the cerebral arteriole and capillary vasoconstriction which results in cerebral anoxia, thus upsetting cerebral carbohydrate metabolism and possibly stimulating the production and release of the convulsant, acetycholine. Both nicotinic acid and amyl nitrite have been reported as efficacious in relieving hypoglycemic convulsions where cerebral angiospasm and anoxia were considered to be a factor.

Without attempting to relate hypoglycemia to hypocalcemia and electrocerebral dysfunction, Fabrykant et al[8] noted that hypoglycemic symptoms, when associated with hypocalcemia and electrocerebral dysfunction, were prevented by anticonvulsive drugs and calcium. With reference to cerebral dysfunction, it is of interest to note that the reactions of several labile diabetics were prevented by the use of a preparation which contains phenobarbital, belladonna and ergotamine. It was believed that the reaction threshhold to hypoglycemic symptoms was raised in these cases.

Etiologic diagnosis in cases of spontaneous hypoglycemia is necessary if proper therapy is to be initiated. In organic hyperinsulinism, whether due to tumor or islet hyperplasia, the treatment is surgical. It is well established that insulin-producing tumors may be located in any part of the pancreas, they may be multiple, and they may be extra-pancreatic. Obviously the only satisfactory method of treatment in this group is complete extirpation of all insulin-producing tumors. In islet hypertrophy, a partial or subtotal removal of the pancreas is indicated. Alloxan has been disappointing in removing excessive islet tissue.

In the treatment of functional hyperinsulinism, a high protein, low carbohydrate diet appears to be the treatment of choice. This is based on the facts that (1) although protein yields about 50 per cent of its weight as glucose, the process of gluconeogenesis from protein proceeds at a slow and even rate, resulting in no appreciable elevation of the blood sugar and consequently no marked secondary fall, and (2) the long period required for the absorption of protein and its conversion to glucose affords a steady supply of glucose over a prolonged period of time.

In hepatogenic hypoglycemia, large amounts of carbohydrates and proteins are indicated, and a meal before retiring at night will usually control the hypoglycemia which most frequently occurs before breakfast.

The following three cases of spontaneous hypoglycemia are both interesting and instructive. The first case presented was originally thought to be due to a pancreatic adenoma, but subsequent studies suggested an hepatogenic origin. The second case of spontaneous hypoglycemia presented resulted from hyperinsulinism due to islet cell hypertrophy, and the third case was due to a pancreatic adenoma.

Case Reports

Case 1

A 54 year old white man was admitted to the Delaware Hospital on January 28, 1950, from the County Workhouse, where he had been incarcerated for two weeks for alcoholic intoxication. On the day prior to admission he was found in his cell in a kneeling position and disoriented; from this he made a satisfactory recovery without therapy. On the following morning at 4:30 o'clock the patient was found comatose in his bed, and was then admitted to the hospital.

On admission the rectal temperature was 101.8 Fahrenheit, pulse 70 per minute and regular, and the blood pressure 130/70 mm of mercury. He could not move his left arm, but was able to move both legs on painful stimuli. His pupils reacted sluggishly to light, and the right eye was externally rotated. Papilledema was not present. The Babinski sign was negative. The heart and lungs were normal.

A spinal tap revealed clear fluid; during the tap the patient experienced myoclonic jerks and nuchal rigidity. A blood sugar was found to be 10.7 mg per cent; intravenous glucose solution was administered and the patient improved during the ensuing 48 hours; the abnormal neurological signs disappeared. A history of chronic alcoholism was subsequently obtained.

Of the laboratory studies performed. x-rays of the chest and pituitary fossa were normal; a galactose tolerance test, blood serology, spinal fluid Wassermann and cell count, and the prothrombin time were normal. The platelet count, Van den Bergh, serum sodium and serum potassium, and electrocardiogram were also normal. The blood urea nitrogen was 5.8 mg per cent, total protein 5.8 gm per cent with albumin .42 gm per cent and globulin 2.38 gm per cent. The icterus index was 9. A glucose tolerance test on February 1, 1950, gave the following result:

Fasting blood sugar	39 mg%
Half hour specimen	69 mg%
One hour specimen	122 mg%
Two hour specimen	136 mg%
Three hour specimen	97 mg%
Four hour specimen	74 mg%

As the patient improved on a regimen of frequent high protein, high carbohydrate feedings, the daily fasting blood sugar level improved.

It was believed that this patient's diagnosis was hyperinsulinism. He was seen on ward rounds by several physicians who felt that this man probably had a pancreatic tumor and should be subjected to an early exploratory operation. A needle biopsy of the liver was performed on February 9, 1950, and was reported to reveal the presence of hepatocellular disease. In view of the normal liver function tests, the patient underwent a subtotal pancreatectomy. Multiple sections of the pancreas revealed no obvious adenoma, and microsopic examination revealed normal pancreas. Of twenty daily blood sugar levels determined after pancreatectomy, all were within normal limits except four, which ranged between 150 and 170 mg per cent. The patient experienced no further hypoglycemic episodes. A repeat liver biopsy done on April 1, 1950, was reported as "slight hepatocellular disease." A glucose tolerance test showed the following:

Fasting blood sugar	61 mg%
Half hour specimen	136 mg%
One hour specimen	182 mg%
Two hour specimen	206 mg%
Three hour specimen	98 mg%
Four hour specimen	59 mg%
Five hour specimen	82 mg%

The patient was discharged on April 12, 1950, to a welfare home, with a final diagnosis of hyperinsulinism, etiology unproven.

On June 23, 1951, the patient was readmitted to the Delaware Hospital for intestinal obstruction. This was corrected by release of adhesions and resection of approximately two inches of gangrenous ileum. During this admission a thymol turbidity test, cephalin flocculation test, bromsulfalein test and prothrombin time were normal. A six hour glucose tolerance test was normal, and a liver biopsy showed "slight cloudy swelling" of the liver. The patient was discharged on July 20, 1951, and no further hypoglycemic symptoms have occurred.

Case 2

A 35 year old white man was admitted to the Delaware Hospital on February 22, 1950, for study. The patient was well until approximately twelve months before admission to the hospital, when he experienced generalized convulsions with loss of consciousness. One year after the initial episode a second attack occurred, in which the patient was found lying on the floor, stuporous and confused; he became oriented without therapy, and complained of a severe headache. Each of the episodes followed the ingestion of alcohol. The past history was suggestive of a peptic ulcer, and the patient utilized alkali frequently to control epigastric pain. Following an electroencephalogram elsewhere, the patient was told he had epilepsy, and diphenylhydantoin sodium was recommended.

The physical examination was not remarkable except for a positive Babinski sign bilaterally immediately after the convulsive episode.

Of the studies done in the hospital, a blood count, urinalysis, blood and spinal fluid serology, colloidal gold curve, spinal fluid protein and cephalin cholesterol were within normal limits. Gastrointestinal x-rays revealed a normal stomach and duodenum, and a pneumoencephalogram showed no remarkable abnormalities. A six hour glucose tolerance test showed the following result:

Fasting blood sugar	44 mg%
Half hour specimen	128 mg%
One hour specimen	130 mg%
Two hour specimen	85 mg%
Three hour specimen	70 mg%
Four hour specimen	20 mg%
Five hour specimen	32 mg%
Six hour specimen	52 mg%

A subsequent glucose tolerance test was discontinued because of hypoglycemic symptoms, at which time the blood sugar level was found to be 52 mg per cent.

A diagnosis of hyperinsulinism was made, and a subtotal pancreatectomy was performed. The microscopic diagnosis was islet hypertrophy.

Following surgery a glucose tolerance test showed:

Fasting blood sugar	60 mg%
Half hour specimen	139 mg%
One hour specimen	160 mg%
Two hour specimen	125 mg%
Three hour specimen	84 mg%
Four hour specimen	64 mg%
Five hour specimen	83 mg%
Six hour specimen	78 mg%

Three consecutive fasting blood sugar specimens were 82, 140 and 78 mg per cent. The patient was discharged asymptomatic, and has remained so to date.

Case 3

A 60 year old white man was admitted to the Delaware Hospital on December 10, 1952, complaining of sudden bouts of weakness, tremor, sweating and disorientation. These episodes occurred before meals, and were relieved by food, especially sweet foods. They had been occurring with increasing frequency for the past several months.

The past medical history revealed that the patient had been a heavy drinker for over twenty years. He has been admitted to this hospital in 1947 in an unconscious state, and responded to intravenous glucose and supportive therapy. At that time he gave a history of "dizzy spells" and nervousness. These attacks occurred suddenly and were accompanied by tremor, sweating, palpitation, weakness and disorientation. The symptoms could be relieved by eating. Among other studies, the blood sugar was found to be 30 mg per cent and subsequently 40 mg per cent. After he regained consciousness, the blood sugar was found to be 120 mg per cent. After three weeks of hospitalization, the patient was discharged with a diagnosis of "encephalopathy secondary to ethyl alcohol ingestion".

The physical examination in 1952 revealed a well nourished patient in no apparent distress. The vital signs were normal, and no significent abnormalities were found on physical examination.

Laboratory studies revealed a normal hemogram and urinalysis. The blood sugar was 44 mg per cent; the blood urea nitrogen, bromsulfalein retention, prothrombin time, serologic test for syphilis, total protein, serum albumin, serum globulin and cephalin cholesterol flocculation test were all entirely normal.

An oral glucose tolerance test revealed the following:

Fasting blood sugar	31 mg%
Half hour specimen	87 mg%
One hour specimen	122 mg%
Two hour specimen	143 mg%
Three hour specimen	108 mg%
Four hour specimen	67 mg%
Five hour speecimen	50 mg%
Six hour specimen	43 mg%

On January 15, 1953, a Whipple operation was performed because it was considered technically impossible to remove the 2.0 centimeter hard encapsulated mass from the head of the pancreas. Microscopic diagnosis of this tumor was pancreatic cell adenoma.

Subsequent blood sugar levels remained in the normal range, and the patient was discharged on February 18, 1953. Why a diagnosis of hyperinsulinism was not established in 1947 is not known.

Discussion

Neurologic and psychiatric symptoms are the most common manifestation of unrecognized hypoglycemia.[9] Excessive sweating, mental confusion and bizarre behavior patterns often occur in hyperinsulinism, and these symptoms may terminate in coma with or without associated convulsions. A temporal relationship of meals and exercises is helpful in establishing the diagnosis and the cause of hypoglycemia, but there are many exceptions.

Management of patients with organic hyperinsulinism prior to surgery has changed rapidly over the past few years to include the use of glucocorticoids and periodic injections of glucagon to the most recent successful therapy for hyperinsulinism from pancreatic islet cell tumors using the new agent Diazoxide. Diazoxide has now advanced to the drug of choice in preparing the patient for definitive surgical procedure.

The use of several provocative tests in establishing the mechanism of hyperinsulinism or hypoglycemia have been introduced. Fagan and Conn have described the use of intravenous tolbutamide as "an aid in establishing a diagnosis of islet cell adenoma." Schwartz has described leucine sensitive non-pancreatic tumors that cause hypoglycemia.[12] In the last few years with the development of radioimmunoassay of serum insulin,[13] it has become possible to delineate the relationship of the blood insulin response to the above tests and therefore pinpoint the cause of hyperinsulin and differentiate between hyperinsulism and hypoglycemia due to liver disease or other causes such as that seen with normal insulin levels in the leucine sensitive tumors. Only careful correlation of the clinical picture and a full array of tests will assure an accurate diagnosis. Even in well documented insulinomas, the tests are sometimes erratic and no single test can be considered a 100% reliable.

Summary

(1) Three cases of spontaneous hypoglycemia were presented; cure was effected in each case, though in the first case, cure may have been dietary rather than surgical; this, however, is open to question.

(2) It is of interest that each of the three patients presented gave a history of alcohol-

ism, and in two cases convulsions occurred.

(3) A brief discussion concerning the etiology, cause of symptoms, differential diagnosis and treatment of spontaneous hypoglycemia has been presented.

REFERENCES

1. Conn, J. W.: The diagnosis and management of spontaneous hypoglycemia; J.A.M.A., 134:130, 1947.
2. Harris, S.: Hyperinsulinism and dysinsulinism; J.A.M.A., 83: 729, 1924.
3. Crain, E. L., Jr., Thorne, G. W.: Functioning islet cell adenomas; Medicine, 28:427, 1949.
4. Strauss, H., and Weschler, I. S.: Clinical and electroencephalographic studies of changes of cerebral function associated with variations in the blood sugar; Am. Jour. Psychiat., 102:34, 1945.
5. Gorsuch, M. T., Rynearson, E. H.: Hyperinsulinism; The use and misuse of the term; Med. Clin., N. A., 28:985, 1944.
6. Conn, J. W.: The spontaneous hypoglycemias; J.A.M.A., 115: 1669, 1940.
7. Fineberg, S. K., Altschul, A.: The encephalopathy of hyperinsulinism; Ann. Int. Med., 36:536, 1952.
8. Fabrykant, M., Bruger, M.: Dynamics of the hypoglycemic reaction; Am. Jour. Med. Sci., 216:84, 1948.
9. Hoffman, D. L., Scholz, D. A., ReMine, W H.: The diagnosis and surgical management of hyperinsulinism; Surg. Clin. North America, 41:951, 1961.
10. Landow, B. R., Levine, H. J., Hertz, Roy: Prolonged glucogon administration in case of hyperinsulinism due to disseminated islet cell carcinoma; New England J. Med., 259:286, 1958.
11. Fajans, S. S. F., Conn, J. W.: Intravenous tolbutamide test as adjunct in diagnosis of functioning pancreatic islet cell adenomas (Abstr.); Jour. Lab. and Clin. Med., 54:811, 1959.
12. Schwartz, T. B., Flanagan, G. C., Stuppy, H. W., Tarum, D. W.: Hypoglycemia effect of L-Leucine in organic hyperinsulinism (Abstr.); Proc. Central Soc. Clin. Res., 32:88, 1959.
13. Yalow, R. S., and Berson, S. A.: J. Clin. Invest. 39:1157, 1960.

AMA HIGHLIGHTS

The First Biennial Symposium on the Management of Trauma and Disaster Medical Problems will be held in Miami Beach, November 10-11, 1967, at the Carillon Hotel. The program is acceptable for 12 accredited hours hy the AAGP and has been approved for retirement point credits by the Department of the Army, Navy, and Air Force. For additional information, write: Committee on Disaster Medical Care, AMA, 535 N. Dearborn, Chicago, Ill. 60610.

The AMA Clinical Convention will be held in Houston, November 26-29, 1967. The postgraduate program, especially designed for the physician in practice, offers courses in *Fluid and Electrolyte Balance, Oncology, Cardiovascular Disease,* and *Obstetrics and Gynecology.*

AUDIO-DIGEST TAPE RECORDINGS

A library of more than 300 one-hour tape recordings devoted to comprehensive panel discussions and symposia on everyday office problems, has been released to the medical profession by the Audio-Digest Foundation, Los Angeles. The 1967 "Catalog of Classics" presents teaching material in seven specialty areas. Anesthesiology, Obstetrics-Gynecology Surgery, Pediatrics, Internal Medicine, Ophthalmology, and General Practice. A number of tapes also focus on the Basic Sciences, Cancer, Psychiatry, Gastroenterology, Cardiology, Arthritis, Geriatrics, and Hematology. The *Catalog of Classics* is available free of charge by writing the Audio-Digest Foundation at 619 S. Westlake Avenue, Los Angeles, 90057.

● **This case report demonstrates the typical clinical features of Cushing's Disease with some unusual laboratory findings and a forty-six month followup.**

CUSHING'S DISEASE TREATED BY BILATERAL TOTAL ADRENALECTOMY

Richard A. Kahlbaugh, M.D.

Cushing's disease remains an infrequently seen entity in spite of its association with a great variety of primary disorders; i.e., oat cell carcinoma of the lung, carcinoma of the thymus, carcinoma of the pancreas, testicular malignancy, carcinoma of the adrenal, adenoma of the adrenal cortex, and bilateral adrenocortical hyperplasia with or without a pituitary adenoma. Cushing's disease due to primary adrenal or pituitary pathology is a correctable and in many instances a curable disease, so that prompt recognition and treatment are essential.

The typical syndrome of hyperadrenocorticism is easily recognized and can be readily confirmed by determination of plasma or urinary corticoids and 17-ketosteroids and the abnormal responses to adrenal stimulation or suppression. The classical clinical features are protein wasting, osteoporosis, ecchymosis, striae, hypertension, abnormal glucose tolerance, obesity of central type, mental aberrations, edema, acne, and menstrual disorders. The following case report illustrates most of these typical findings.

A 19-year old white man was initially admitted to the Memorial Hospital in October of 1963 with typical features of Cushing's disease. He had noticed increasing weight gain, fatigue, irritability, and weakness. He was found to have hypertension, acne, glycosuria, hyperglycemia, purple striae, and appeared to be excessively shy. He was unable to continue his work as a heavy machine operator because of weakness. A plethoric appearance, mild hair loss, and mild peripheral edema were noticed by the patient and his family. There was no dyspnea or orthopnea. A history of two episodes of rheumatic fever in 1953 and 1956 was elicited. No evidence of rheumatic carditis was ever found. He had a tonsillectomy after the recurrence of rheumatic fever in 1956. An episode of jaundice ten years prior to admission also was reported, presumably due to infectious hepatitis. There was no family history of endocrinopathies.

The physical examination revealed an obese white man with moon face, thinning hair, acne, a buffalo hump, extensive purple striae, and plethoric appearance. Temperature 98.4 F, pulse 90, respirations 20 per minute, blood pressure 185/100. Diastolic pressures had been 100-120 prior to admission. The funduscopic examination showed arteriolar spasm and AV crossing defects. No hemorrhages or exudates were visualized and the optic discs were normal. Several teeth were missing. The neck was supple; no adenopathy was noted and the thyroid appeared normal. The lungs were clear to percussion and auscultation. There was no cardiomegaly; a regular sinus rhythm with a heart rate of 90 per minute

---

Dr. Kahlbaugh is on the Teaching Staff, Delaware Division, Wilmington Medical Center.

was observed. The liver, kidneys, and spleen were not palpable. Normal male genitalia. A trace of pretibial edema was present. Figures 1 and 2 show the typical features of Cushing's disease in marked contrast to his appearance of three years before admission in Figure 3.

Laboratory studies showed a hemoglobin of 12.3 grams; white blood count 14,000 with 81 polymorphonuclear cells, 18 lymphocytes, and one monocyte on the differential smear; one random white blood count of 40,000 was reported. A two-hour postprandial sugar was 162 mgms per cent, BUN 15 mgms per cent, eosinophil count 60/mm^3, serum calcium 9.3 mgms per cent. The glucose tolerance curve was a diabetic type with fasting 90 mgms per cent; one-half hour, 181 mgms per cent; one hour, 181 mgms per cent; two hours, 228 mgms per cent; and three hours, 203 mgms per cent. Serum potassium was 2.9 mEq/liter. An EKG showed T wave changes compatible with hypokalemia. A chest x-ray, skull x-rays, and bone survey were within normal limits. No alteration of the sella turcica was noted nor was osteoporosis evident.

Baseline 17-ketosteroids and corticoids were markedly elevated and are shown with responses to ACTH stimulation in Table I. Results of dexamethasone suppression are shown in Table II. These studies will be discussed later with reference to diagnostic implications of the same.

On November 25, 1963, a bilateral total adrenalectomy was performed through posterior incisions with the patient in the prone position with simultaneous dissection of the two sides. One hundred milligrams of Solu-Cortef was given intravenously the morning of surgery, again at the start of surgery, and a third dose at the time of excision of the adrenal glands. There were no immediate operative, anesthetic, or postoperative problem; however, he developed a left lower lobe pneumonia three days postoperatively. A sputum culture grew out a beta-hemolytic streptococcus, Group A, and a coagulase-positive staphylococcus. Initial therapy with intravenous penicillin, ten million units per day, was followed by intramuscular procaine penicillin; and with a good response after five days, he was switched to oral penicillin. Throughout this period of time, he received 300 mgms of cortisone per day. The dose of cortisone was reduced after the pneumonia cleared, and he was discharged on a dose of 50 mgms of cortisone per day. The pathology report on the adrenal glands was bilateral hyperplasia.

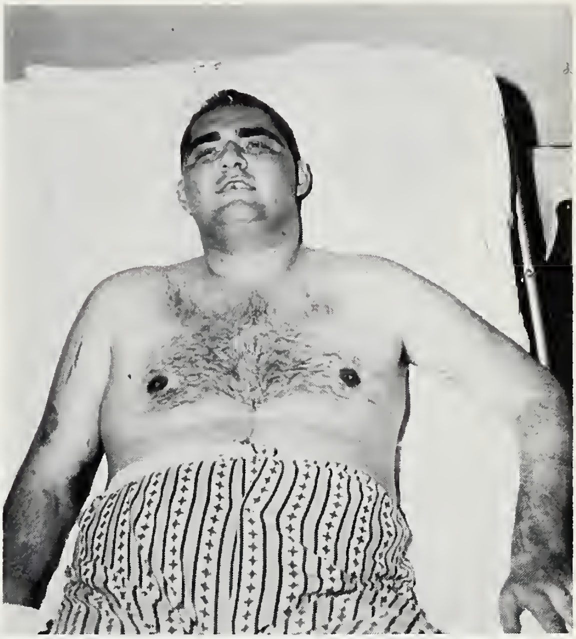


Figure I

Typical moon facies, acne, and purple striae are demonstrated.

The patient has done quite well since discharge and has been maintained on 25 to 37½ mgms of cortisone per day. His weight returned to a more normal level and the striae gradually lost the purple color. His acne and other features of hyperadrenocorticism disappeared. His blood pressure returned to normotensive levels three months after surgery and he returned to his usual occupation of operating heavy machinery. Two incidents requiring hospitalization have occurred in the three and a half year period since surgery and they will be described briefly.

On August 28, 1965, roughly two years after the bilateral adrenalectomy, the patient had a grand mal seizure. Skull x-rays and a brain scan were normal. The EEG showed

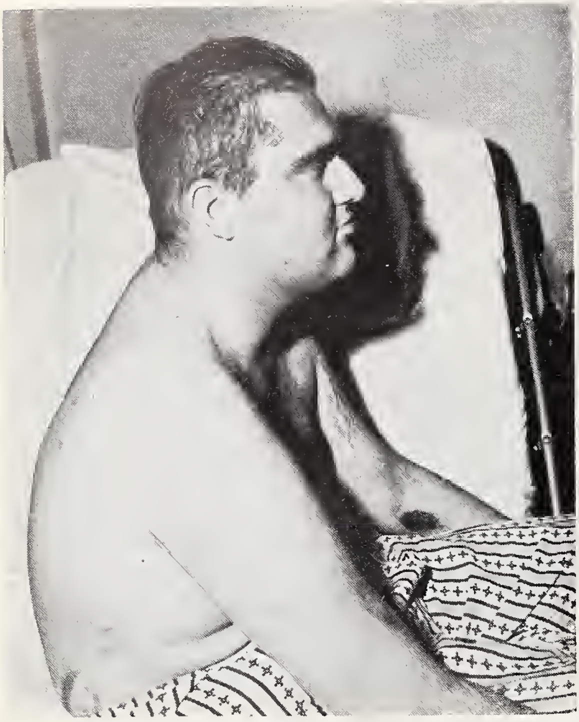


Figure 2
Central type obesity, buffalo hump, hirsutism, acne, ecchymoses, and large purple striae are shown.

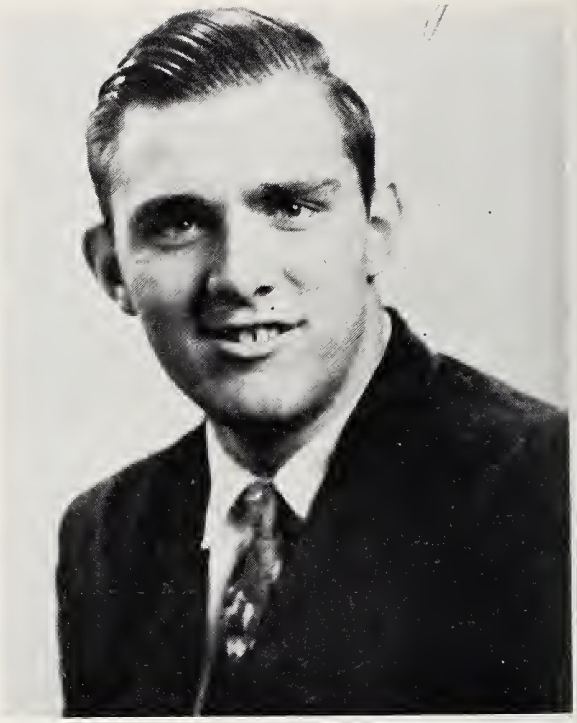


Figure 3
Appearance prior to onset of Cushing's disease.

a diffuse abnormality compatible with a seizure disorder. Cerebrospinal fluid studies were normal; ie, cell count, protein, sugar, chlorides, and manometrics. It was found that his father also has an idiopathic seizure disorder. The patient was discharged on cortisone 37.5 mgms daily; phenobarbital, 30 mgms, and dilantin, 100 mgms, three times a day. Urinary steroid studies at this time showed 5.0 mgms per twenty-four hours and 5.7 mgms per twenty-four hours respectively for the 17-ketosteroids and corticoids.

The patient did well again until December 31, 1966, when he was re-admitted in Addisonian crisis. He had had a three-day history of fever, nausea, and vomiting. He was seen on the third day of illness and at that time exhibited deep pigmentation in his skin folds and around his eyes; he was very dehydrated and had a blood pressure of 80/60 and a heart rate of 120 per minute. He was given 20 mgms of prednisolone intravenously and his blood pressure promptly rose to 140/80. The tachycardia persisted. The pharynx was injected slightly. The chest was clear to percussion and auscultation. There was no cardiomegaly. The abdomen was soft and nontender. The bowel sounds were hyperactive and there were many large striae but no discoloration. Laboratory studies showed a hemoglobin of 14 grams; white blood count 5800, differential normal. Serum sodium was 119 mEqs per liter; potassium 5.9 mEqs per liter; chlorides, 90 mEqs per liter; plasma CO_2, 16 mEqs per liter.

He was treated with Solu-Cortef and saline intravenously initially, and then cortisone 100 mgms, and 9 alpha-florinef 0.2 mgms daily, and supplemental salt tablets. He has not required further therapy with 9 alpha-florinef and his maintenance dose of cortisone varies from 37½ to 50 mgms daily. The serum sodium is now 138 mEqs per liter; potassium, 4.1 mEqs per liter; chlorides, 104 mEqs per liter; CO_2 22 mEqs. per liter. Figure 4 shows a recent photo of this patient and it is apparent that there are no gross features of Cushing's disease.

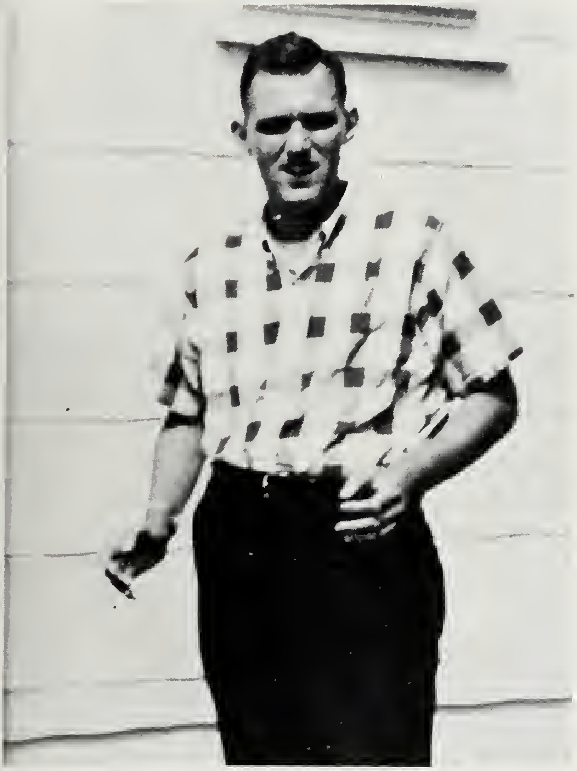


Figure 4

Appearance some eighteen months after surgery.

Discussion

The case presented illustrates most of the clinical and laboratory features of Cushing's disease. There were some deviations from the usual response to ACTH and dexamethasone expected with bilateral hyperplasia. One would expect an exaggerated response in urinary 17-ketosteroids and corticoids to ACTH stimulation and suppression of the same by dexamethasone to essentially normal levels. The absence of a greater response to 50 units of ACTH by intravenous infusion over an eight-hour period and/or to dexamethasone 8 mgms per day suggests adrenal tumor. The extremely high baseline levels of 17-ketosteroids and corticoids are also more in keeping with those seen with adrenal carcinoma. Scott, Liddle, Foster, and Harris report that in their series only two patients had 17-ketosteroids over 35 mgms per twenty-four hours and both of those had malignant tumors of the adrenal gland. Inconsistancies such as this are found often enough and the differentiation between adrenal hyperplasia, adenoma, and carcinoma cannot be definitively made on the basis of stimulation and suppression tests. This point gives further credence to bilateral total adrenalectomy as the treatment of choice, with the exception of those cases in which a pituitary adenoma is found producing sella turcica deformities. In these instances, pituitary irradiation should be the primary therapy. When pituitary irradiation is given, however, there is a significant rate of recurrence and hypophysectomy or adrenalectomy may be necessary subsequently. Another somewhat unusual feature in this case is the absence of

	CREATININE	CORTICOIDS	17-KETOSTEROIDS
1.	1.74 gms./24 hrs.	90.6 mg./24 hrs.	55.4 mg./24 hrs.
2.	1.67 gms./24 hrs.	54.0 mg./24 hrs.	39.1 mg./24 hrs.
3.	1.79 gms./24 hrs.	108.0 mg./24 hrs.	56.8 mg./24 hrs.
4.	1.66 gms./24 hrs.	116.0 mg./24 hrs.	73.2 mg./24 hrs.
5.	1.52 gms./24 hrs.	94.4 mg./24 hrs.	66.4 mg./24 hrs.

TABLE I

Specimens 1 and 2 are baseline twenty-four hour urine excretion patterns. Specimens 3 and 4 are twenty-four hour excretion patterns collected while receiving ACTH, 50 units, by intravenous infusion. Specimen 5 was a repeat collection without ACTH stimulation.

	17-KETOSTEROIDS	CORTICOIDS
1.	15.2 mg./24 hrs.	43.4 mg./24 hrs.
2.	29.4 mg./24 hrs.	52.6 mg./24 hrs.

TABLE II

Twenty-four hour excretion patterns following Dexamethasone, eight milligrams a day in divided doses.

demonstrable osteoporosis in spite of the tremendously high corticoid levels.

The pre and postoperative management of the patient is critical in patients with Cushing's disease, undergoing bilateral adrenalectomy. There is some difference of opinion as to the value of preoperative administration of cortisone. At Johns Hopkins Hospital, they now give cortisone only at the time of surgery and at the actual time of excision of the adrenal glands. There are certainly theoretical reasons to treat with cortisone prior to surgery, particularly if the suppression test is positive. The operative procedure is made technically difficult by the degree of truncal obesity. There may also be an anesthetic problem because of the frequent finding of a rather short thick neck. Obesity and the need for large maintenance doses of cortisone immediately postoperatively make serious wound infection and bacteremia a complication worthy of diligent search. Other infections may also occur as exemplified by the pneumonia in this patient. Obviously, early recognition and institution of antimicrobial therapy are essential under these conditions.

Return to normal body habitus, correction of the metabolic abnormalities, and resumption of the normotensive state occur gradually in the postoperative period and generally the return to a normal state occurs within a three to four month period. The necessity for prompt treatment of intercurrent infection and increase in the steroid replacement in times of stress to prevent the Addisonian crisis is illustrated.

Summary

Few clinical entities present such a striking picture as does Cushing's disease in its classical form. With today's technical advances in diagnostic facilities and therapeutic regimens, a patient may undergo total bilateral adrenalectomy with relatively small risk. A case of Cushing's disease has been presented here, demonstrating the typical clinical features with some unusual laboratory findings. Bilateral adrenalectomy was performed and the patient is back at his usual occupation and leading a normal life three and a half years postoperatively. The onset of an idiopathic seizure disorder is described as well as an episode of acute adrenal insufficiency precipitated by viral gastroenteritis.

REFERENCES

1. Eskovitz, W. E., and Reingold, I. M.: Functioning Malignant Bronchial Carcinoid with Cushing's Syndrome and Recurrent Sinus Arrest. Annals of Int. Med., Vol. 54, 1248, 1961.
2. Kirschner, Marvin A., Powell, Ralph D., Jr., and Lipsett, Mortimer B.: Cushing's Syndrome: Nodular Cortical Hyperplasia of Adrenal Glands with Clinical and Pathological Features Suggesting Adrenocortical Tumor. J. Of Clinical Endocrinology and Metabolism. 24: 947, 1964.
3. Scott, H. William, Jr., Liddle, Grant W., Harris, A. Page, and Foster, John H.: Diagnosis and Treatment of Cushing's Disease. Annals of Surgery, 155, 696, 1962.

RECENT ARTICLES OF NOTE

We commend to our reader's attention, *The Future of Medical Education,* by Oliver Cope, M.D., Professor of Surgery at Harvard, in the October issue of Harper's Magazine.

METHADONE IN THE RELIEF OF PAIN —

A Clinical Note

• **When used in adequate dosage, methadone is a highly effective pain reliever (with few side effects) for patients with cancer. As such, it deserves wider use.**

Robert W. Frelick, M.D.

After noting the work done by Dr. Dole with narcotic addicts, as written up in both the JAMA[1] and the Archives of Internal Medicine,[2] we started about a year ago to use methadone for our patients with terminal cancer. Dole and co-workers demonstrated that methadone in doses up to 80-100 mgm per day orally, given in one but occasionally in two doses, could control heroin addicts.

They usually worked the dose up gradually, under controlled conditions. The methadone was able to block the euphoric effects of heroin, especially at the 80 to 100 mgm/day level, with few side effects. The most marked one was a tendency to constipation. Their addict patients were able to lead normal lives at work and at school on the same dose. There was no evidence of tolerance. Methadone orally did not give the peak effects with euphoria seen with most injectible narcotics, and it avoided the let-down afterwards.

This work with addicts suggested that our terminal cancer patients might be similarly helped, especially those that had become dependent on "the needle" (usually Demerol) and were unhappy if the nurses were 5 minutes late with their pain needle. By using large enough doses to control pain and the need for other narcotics, we have subsequently become convinced that methadone is an excellent palliative agent for our cancer patients.

We have found (this is now well recognized with other drugs used for cancer chemotherapy) that amount of dose, method of administration, and frequency of dosage can make big differences in the effectiveness of drugs.

We have attempted to set up a controlled study, but so far have not been able to work out the necessary details. In the interim our use of methadone has become so valuable that we thought we should submit this as a clinical note. Perhaps someone with more facilities may be able to put this to a more rigorous study than we are able to.

Medical Oncology Program

At the Wilmington Medical Center we have an active Medical Oncology program where we are following 80-100 patients in cancer chemotherapy currently. We naturally run into many who have pain problems. We find that for those whose pain is not controlled by simple analgesics, the use of methadone on a regular routine basis has a definite advantage. Initially, we used it chiefly for patients who were already obviously "hooked" on Demerol or morphine. We found that by giving methadone in good doses at regular inter-

---

Dr. Frelick is Director of Medicine, Wilmington Medical Center, Wilmington, Delaware.

vals (the intervals and dose seem to vary a good deal from patient to patient — some will do well at 8-12 hour intervals — others need it every four), we have done away with the "clock watching" for the needle. Methadone seems to avoid the ups and downs associated with the injection of shorter-acting narcotics. With oral methadone our patients don't get quite as "high" and at the same time don't get as depressed as their level wears off. Our nurses are convinced that their nursing problems are lighter and the patients are happier.

Increased Dosage Recommended

For those who have tried methadone in the past and found it inadequate, we would suggest increasing the doses. We have been able to increase the dose to as high as 35-40 mgm every four hours, if needed for pain control, with no significant side effects except for some drowsiness. Likewise, we have had no difficulty in getting people off this drug if the pain disappears. However, we have not been particularly concerned about taking the patients off, since it seems justifiable to keep these terminal patients on drug, if it keeps them comfortable. With methadone we have been able to sustain many people as out-patients, who in the past would have had to have been hospitalized for hypodermic injections. We have also been able to avoid several chordotomies. About 15% of our patients develop some nausea. The average dose of drug seems to be about 10 mgm every six hours. Some, especially the elderly, often do well on as little as 2.5 mgm. We find there is some advantage in giving it on a regular basis — at least, if the patient is not free of pain, he is given the methadone. Dependence has not been much of a problem.

This is an inexpensive narcotic. It is relatively easy to obtain. We have had no problems with overdosage. Our need for other sedation has gone down at the same time. The advantages of adding phenergan or other sedatives to cut the dose is unnecessary with methadone. This suggests that much of the anxiety associated with pain is more likely secondary to the pain than primary, so that the best method of relieving anxiety is control of pain with methadone and not by the use of various tranquilizers. There is very little patient or nurse resistance, and even in the homes there is little in the way of misuse as far as we can determine. When we instruct other physicians to use this drug, we find our chief problem is overcoming their reluctance re dosage. Most physicians are willing to give doses at frequent enough intervals, but are not willing to prescribe large enough doses.

We do have a problem in trying to evaluate pain response in these patients. They are usually on other drugs and radiotherapeutic treatments for cancer. This sometimes causes the dilemma of having relieved the patient's pain with methadone, and not being quite sure whether any of the pain relief is due to the chemotherapeutic drug itself. Under these circumstances, we judiciously reduce the dose of methadone and observe the response.

In summary, we are reporting a subjective, yet hopefully valid, experience in pain control in cancer patients which suggests that adequate doses of methadone, 60 to 100 mgm/day, if necessary in divided doses, makes it one of the most hopeful drugs for palliation in terminal cancer problems.

REFERENCES

1. Dole, V. P.; Nyswander, M. E.: A Medical Treatment for Diacetylmorphine (Heroin) Addiction, J.A.M.A. 193: 646-650, 1965.
2. Dole, V. P.; Nyswander, M. E.; Kreek, J.: Narcotic Blockade Archives Internal Medicine, 118: 304-309, 1966.

IN THE NEWS

Herman J. Bennett, M.D., has been elected chairman of the Occupational Health Section of the American Public Health Association at the October Meeting.

PULMONARY AND EOSINOPHILIC REACTION TO NITROFURANTOIN

• A patient with severe pulmonary congestion secondary to an adverse reaction to nitrofurantoin (Furadantin) is presented.

Allston J. Morris, M.D.

It has been five years since Israel and Diamond[1] first reported a case of pulmonary infiltrate and peripheral eosinophilia due to sensitivity to nitrofurantoin. Since then, seven[2,3,4,5] additional patients have been reported in the English language literature and two articles[6,7] have appeared in the foreign literature. The following case would appear to be another such pulmonary and eosinophilic response to nitrofurantoin.

The patient, a 39-year-old white woman, had been in good health except for an asymptomatic, chronic urinary tract infection. Approximately one week before admission to the hospital she was started on nitrofurantoin. Two days before admission she developed generalized malaise, muscle aching and fever. She then developed a non-productive cough. On the day of admission she awakened with a temperature of 103 F. She was restless, had headache, generalized aching, and a persistent non-productive cough.

There was no history of specific allergic disease, although in 1961 she had had an episode of "pleurisy" which spontaneously cleared when her cat died.

Physical examination on admission revealed a well nourished woman who was anxious, tachypneic, restless, and acutely ill. The blood pressure was 100/60; pulse 110; respiration 24-30 per minute. Examination of the head and neck was not remarkable. The chest revealed coarse rales, particularly over the left upper lobe anteriorly and at both bases posteriorly. Examination of the abdomen was not remarkable. There was no evidence of a thrombophlebitic process in the lower extremities.

Chest x-ray taken one hour before admission (Figure 1) showed bilateral opacification of both lung fields, more marked on the left than the right and of greatest density at the bases, fading in the upper half of the lung field. Both apices were clear. The heart shadow was entirely normal.

The white blood count on admission was 23,600 with 89 polys and 2 eosinophiles. The urinalysis showed a specific gravity of 1.023, 2+ albumin, 3+ acetone, and 1-2 white cells per high powered field. Hemoglobin was 11.8 grams. Three days after admission the white count was 9,000 with 76 polys and 10 eosinophiles.

Because of the patient's acute and severely ill condition and despite the suspicion that the pulmonary infiltrate might be due to nitrofurantoin, she was started on penicil-

---

Dr. Morris is Senior Attending Physician, Department of Medicine, Wilmington Medical Center, Wilmington, Delaware.

Nitrofurantoin, *Furadantin;* Mephanesin, *Tolseram, Tolserol;* Sulfadimethoxine, *Madribon.*

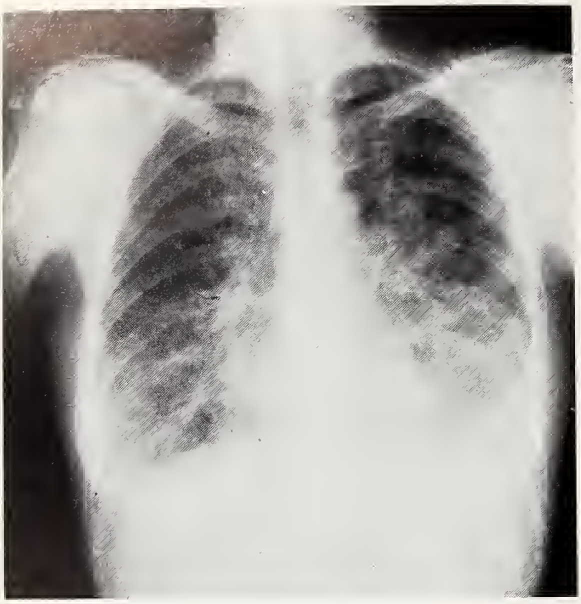


Figure 1

lin therapy after appropriate cultures had been taken.

Within 36 hours the patient's fever had disappeared. The pulse rate had returned to normal and the signs of toxicity had entirely subsided. A chest x-ray (Figure 2) taken three days after the initial x-ray showed almost total clearing of all densities in the lung fields. A tiny amount of fluid remained at the bases.

Although the author did not have the temerity to challenge the patient with another exposure to nitrofurantoin, the clinical picture and the very rapid x-ray clearing and clinical improvement, as well as the remarkable similarity to the patients already reported in the literature, would seem to leave little doubt that this was, indeed, a pulmonary response to nitrofurantoin.

Comment

The clinical picture presented by the nine cases, including this one, appearing so far in the English language literature, it that of an adult (30-61 years of age), of either sex (4 men, 4 women), with a rather sudden onset of fever, chills, cough, tachypnea, and tachycardia. There is a leukocytosis (9,000-21,000) and usually no eosinophilia during the acute stage. Chest x-ray usually (5 out of 8 cases) discloses a patchy density in the lower lung fields, often bilateral and most often having the appearance of pulmonary edema. (Patient No. 2 of Murray and Croninberg revealed only a lesion appearing to be a right lower lobe lobar pneumonia.) In three cases the x-ray failed to reveal any characteristic findings, although rales at the lung bases had been detected clinically.

In only three cases has a considerable eosinophilia been reported, and in each of these the eosinophilia appeared only during convalescence. In the other five cases, the differential count was not checked during convalescence. In each case rapid defervescence of the clinical and x-ray abnormalities followed the withdrawal of nitrofurantoin. In the present case penicillin was administered because of the alarming clinical picture and the uncertainty that the disease was due solely to nitrofurantoin.

Pulmonary infiltrates, or an x-ray picture compatible with pulmonary edema, have been reported due to a variety of agents. Löffler[8] first called attention to a syndrome of migratory, or transient, pulmonary infiltrate accompanied by eosinophilia. Subsequently, various similar syndromes were described due to para-aminosalicylic acid[9,10,11] sulfonamide-containing vaginal cream,[12] mephenesin,[13] 3-pentadecylcatechol,[14] penicillin,[15] and most recently to sulfadimethoxine.[16]

It is important to recognize, however, that we are quite probably dealing with several different clinical syndromes. Löffler[8], for instance, emphasized that of his 51 reported cases, 14 were found on routine chest x-rays of symptom-free contacts of TB patients. He made no connection between these 14 cases and the ingestion of drugs. Furthermore, 30 of his 51 patients had no elevation of temperature. Only 2 of his 51 patients were sick enough to go to bed.

Quite clearly the clinical picture presented by this patient and the eight others referred to earlier[1,2,3,4,5] is very different.

About the pathology, little has been published. Epstein and Kligman[14] have presented a fascinating theory of the pathogenesis of a pulmonary infiltrate occurring with peripheral eosinophilia following the injection of 3-pentadecylcatechol. They hypothesize the trapping of eosinophiles in the lungs. Recently[16] Fiegenberg, Weiss and Kirshman have had the opportunity to study the lung biopsy of a patient who showed pulmonary infiltrate and peripheral eosinophilia after ingestion of sulfadimethoxine. Although the patient was not febrile she showed a clinical and x-ray picture otherwise consistent with the present case. Sections of lung obtained on biopsy showed "sheets of eosinophiles through the grossly abnormal area. The alveolar lumens were packed with histiocytes, but neither histiocytes nor eosinophiles were present in the alveolar septa."

Radiologically the most common picture has been that of pulmonary edema. That this is not a universal picture is emphasized by the two cases which showed no x-ray changes, one with a picture of lobar pneumonia, and one with upper, middle and lower lobe infiltrates which had none of the characteristics of pulmonary edema. It may be significant that the duration of illness in this last case was considerably longer than in any of the others.

Finally, it should be remarked that considering the wide variety of agents already incriminated in the pathogenesis of this syndrome, it seems entirely likely that other medicaments may rise to this syndrome. Since the clinical picture at onset mimics an acute pulmonary edema or an acute bronchopneumonic process, and since peripheral eosinophilia may not appear until late in the course of the illness, or perhaps not at all, it must follow that many such cases are being labelled pulmonary infiltrate or pulmonary edema, cause undetermined. Or it may be that many are being labelled as viral pneumonia.

It therefore is incumbent upon the clinician who first sees patients with such a clinical picture to inquire carefully as to the recent ingestion or injection of medications, and always to consider the possibility of this curious syndrome.

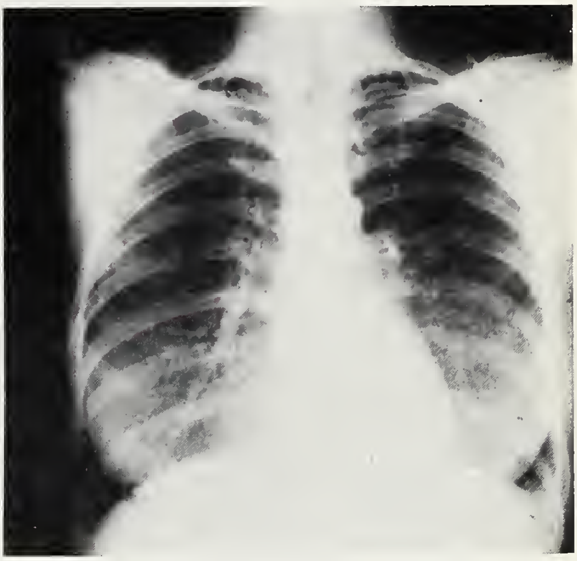


Figure 2

Summary

1. A case of pulmonary infiltration with peripheral eosinophilia is detailed.
2. The pertinent literature is reviewed.
3. A plea to the clinician is made to consider the possibility of this syndrome in any patient with an otherwise unexplained transient pulmonary infiltrate.

REFERENCES

1. Israel, Harold L., and Diamond, Paul: Recurrent Pulmonary Infiltration and Pleural Effusion Due to Nitrofurantoin Sensitivity, New Eng. J. Med. 266:1024-1026, 1962.
2. Muir, D. C. F., and Stanton, J. A.: Allergic Pulmonary Infiltration Due to Nitrofurantoin, Brit. Med. J. 1: 1072 (April 20) 1963.
3. Robinson, Benjamin R.: Pleuropulmonary Reaction to Nitrofurantoin, J.A.M.A. 189: 239-240 (July 20) 1964.
4. Murray, M. J., and Kronenberg, Richard: New. Eng. J. Med. 273: 1185-1187 (Nov. 25) 1965.
5. Strauss, Walter G., and Griffin, L. Martin: Nitrofurantoin Pneumonia, J.A.M.A. 199: 765-766 (March 6) 1967.
6. Lubbers, P.: Allergische reaktion gegen Furadantin, Deutsche Med. Wscher. 87: 2209-2211 (Oct. 26) 1962.
7. Rasmussen, J.: Furadantinallergi, Ugeskr Laeg 126: 167-168 (Feb. 6) 1964.
8. Loffler, W.: Schweiz med. Wschr. 66: 1069 (Nov 7) 1936.
9. Warring, Frederick C., Jr., and Howlett, Kirby S., Jr.: Allergic Reactions to Para-aminosalicylic Acid, Amer. Rev. of Tuberculosis 65: 235-249, 1952.
10. Cuthbert, R. L.: Loffler's Syndrome Occurring During Streptomycin and PAS Therapy, Brit. Med. J. 398-399 (Aug. 14) 1954.
11. Atwell, Robert J., and Prior, John A.: Allergic Pneumonitis During Chemotherapy for Tuberculosis: Report of Two Cases Due to Para-Aminosalicylic Acid, Ann. Int. Med. 42: 190-197, 1955.
12. Klinghoffer, June F.: Loffler's Syndrome Following Use of a Vaginal Cream, Ann. Int. Med. 40: 343-350 (Feb.) 1954.
13. Rodman, Theodore; Fraimow, William; and Myerson, Ralph: Loffler's Syndrome: Report of a Case Associated with Administration of Mephenesin Carbamate (Tolseram), Ann. Int. Med. 48: 668-674, 1958.
14. Epstein, William L., and Kligman, Albert M.: Pathogenesis of Eosinophilic Pneumonitis (Loffler's Syndrome), JAMA 162: 95-97, 1956.
15. Reichlin, Seymour;; Loveless, Mary H.; and Kane, Ernest G.: Loffler's Syndrome Following Penicillin Therapy, Ann. Int. Med. 38: 113-120, 1953.
16. Friegenberg, D. S.; Weiss, H.; and Kirshman, H.: Migatory Pneumonia with Eosinophilia, Arch. Int. Med. 120: 85-89 (July) 1967.

ACUTE IDIOPATHIC RHABDOMYOLYSIS WITH MYOGLOBINURIA

• **Report of a case of recurrent, non-exertional type of rhabdomyolysis and myoglobinuria without defect in muscle glycogenolysis.**

Alfred E. Bacon, Jr., M.D.

The presence of myoglobin in the urine is associated with many infrequently seen disorders. It may occur in normal persons following heavy exercise (March hemoglobinuria),[1] electric shock therapy,[2] and following extensive muscle destruction, as by crushing or infarction. It has occurred in patients with muscular dystrophy, usually following exercise.[3] Epidemic myoglobinuria associated with ingestion of fish (Haff disease) was common early in this century in Eastern Europe and Scandinavia.[4]

Myoglobinuria as a manifestation of a primary abnormality of muscle may be classified into two general categories; that associated with exertion and that which is non-exertional.[5] The term paroxysmal paralytic myoglobinuria is suggested for that group of patients in whom strenuous exercise commonly leads to myoglobinuria.[6] These patients often exhibit a hereditary pattern and in certain of of these a specific muscular enzymatic defect in glycogenolysis may be demonstrated.[7,8] In this group, the disease may be called chronic progressive myopathy with myoglobinuria or McArdle's syndrome. Other patients with exertionally-induced myoglobinuria reveal a high familial incidence of muscular dystrophies.[5] Another familial form has been reported in which attacks will follow exercise in the fasting state or after a low carbohydrate diet.[9]

Reported cases of the non-exertional form of myoglobinuria associated with rhabdomyolysis are less common. In some patients a seemingly small amount of exercise produces spontaneous onset of rhabdomyolysis.[10] In others, ingestion of alcohol may be a factor,[11] and abnormal heme compounds have been demonstrated in such a patient.[12] Primary myositis has led to myoglobinuria without exertion.[6]

It is appropriate that these patients be considered as having acute idiopathic rhabdomyolysis until their disease process is further understood or classified into an established entity.

Korein et al reviewed the 19 non-exertional cases reported until 1959 and found over half were associated with febrile illness, eleven having non-identified respiratory infection or pneumonia and two having diarrhea due to

---

Dr. Bacon is Senior Attending Physician, Department of Medicine, Wilmington Medical Center, Wilmington, Delaware.

Shigella. Korein proposed the term "toxic myoglobinuria" to describe these patients with non-exertional rhabdomyolysis associated with infections.[6]

Case Report

The patient, a fourteen year old boy, was admitted to the Delaware Hospital on February 2, 1963, with a chief complaint of fever and malaise for seven days, and generalized pain and passage of coffee-colored urine for four days. The patient previously had been in good health, strong and athletic, a roller skating competitor at a national amateur level. One year prior to admission after doing 100 push-ups, he had marked weakness and pain in the arms and shoulders which lasted for six months. At no time was dark urine noted.

He spent, as a rule, seven hours each Saturday and Sunday skating. He had gone skating without any incident on January 25 and 26, 1963, Saturday and Sunday. On Monday he developed non-specific symptoms characterized by sore throat, headache, malaise and temperature elevation to 102 F. On the third day, he had onset of marked generalized muscular pain which became progressively worse with any activity, and at this time the urine became dark in color. He was examined by his physician on the fourth day of illness and no unusual findings were present except for fever. It was concluded the patient had influenza and a "sulfa" drug was prescribed. Although dark urine had been present for one day, the physician was not informed. All symptoms continued and muscular weakness progressed so that the patient was unable to climb out of bed without an assistant. Although no food was eaten for four days, large quantities of fluid were consumed with frequent passage of consistantly dark urine. He was admitted on the fifth day of illness.

On admission, the following pertinent abnormalities were present: There was marked swelling of the neck and shoulder girdle muscles. (This swelling became much more apparent as the patient improved and the swelling diminished.) The urine was coffee colored and strongly positive to benzidine test but no red blood cells were evident on microscopic examination. A few coarsely granular casts were present, and tests for bile in the urine were negative. Other admission studies included an admission hemoglobin of 17.6 grams % with a hematocrit of 49%. White blood count was 12,335 with differential showing 71 polymorphonuclear granulocytes, 8 bands, 18 lymphocytes, 2 monocytes and 1 eosinophile. Blood urea nitrogen was 20 mg % and cold agglutinin titer, Coomb's test, and VDRL were negative.

Electrophoresis of the urine was done according to the technique described by Whisnant et al.[13] One part of urine was mixed with 2 parts of serum, run parallel with a hemolysate of hemoglobin A and S, and stained with benzidine-peroxide. The pigment of the urine migrated more slowly than the hemoglobin S and A and was considered to be myoglobin.

His hospital course was characterized by continued marked weakness for four days, then a gradual slow regain of strength, and gradual clearing of the urine color. Benzidine tests of the urine continued to be positive throughout his hospitalization. The blood urea nitrogen rose progressively to 38 mg % on the fifth hospital day. This was associated with a voluntary intake of 4 to 7 liters of fluid per day and an equivilant output. Specific gravity of the urine varied from 1.011 to 1.004. Albuminuria was 4+ for the first four days, decreasing to 1+ at time of discharge. In the sediment occasional coarsely granular and rare hyaline casts were seen with no red blood cells. Serum potassium was 5.9 mEq/liter the third hospital day, and 24 hour urine potassium was 5 mEq/liter on the fifth hospital day. The patient was fully recovered by the eleventh day except for mild generalized weakness and muscle tenderness, and was discharged.

Virus antibody titers were studied on sera taken on February 4 and February 21. (Virus Diagnostic Laboratory, Children's Hospital, Philadelphia, Pennsylvania.) These showed results "compatible with recent infection of

Influenza A virus," and were negative against Q-fever, Influenza B, C, psittacosis, lymphogranuloma, Influenza 1 to 3 and adenoviruses.

The patient was admitted to the Medical Neurology Branch of the National Institute of Neurological Diseases and Blindness on June 5, 1963, for further study at a time when he was asymptomatic. The following pertinent studies were done and were reported as normal: Ischemic exercise test (Protocol of Schmid and Mahler),[3] electromyogram, motor and sensory nerve conduction time, urine urobilinogen (6 Ehrlich units in two hours), urea and creatinine clearances, glucose tolerance test, serum protein-bound iodine (PBI), cryoglobulins, serial venous measurements of phosphorus, potassium and glucose during the ischemic exercise test. Muscle biopsy was normal, as was histochemical examination and in vitro, measurement of glycogen metabolism. Analysis of myoglobin content and type showed no abnormality as performed in the laboratory of Dr. Samuel Boyer at the Johns Hopkins University Hospital.[14]

There were no attacks for two years. In that interval he had two or three minor respiratory infections which were free of significant temperature elevations and free of dark urine. On each occasion muscular aches persisted for three to four weeks, and on one occasion a Beta-hemolytic streptococcus was isolated from the pharynx.

The second attack occurred on January 1, 1965, and had its onset with respiratory tract symptoms and a temperature elevation to 103 F. He was treated by his family physician with penicillin (route not known) and then because of the onset of a maculopapular, nonpruritic diffuse rash, erythromycin was substituted. Diffuse muscular pain appeared in four days, with onset of dark urine one day later.

Pertinent findings on admission included obvious enlargement of the muscles of the neck, and edema so marked in the lumbar area that fluid could be felt squishing on rapid palpation. Urinary electrophoresis again demonstrated the abnormal pigment to be myoglobin.

Early in this admission there was little urine passed, presumably related to the marked water retention in the tissues, although renal tubular necrosis could not be excluded. He was given mannitol, 150 grams over a 15 hour period, with diuresis of 2000 cc of urine, after which diuresis associated with large fluid intake continued. Other laboratory studies during this second admission included 2+ albuminuria; normal hemoglobin, total and differential white blood cell count, serum electrolytes and VDRL. A serum lactic acid dehydrogenose was elevated to 2,462 units.

By prearrangement, two days after admission he was transferred to the National Institute of Neurological Diseases and Blindness. Their studies documented myoglobinuria by starch gel electrophoresis and photometric examination of the urine. Serum enzymes were markedly elevated as follows: SGOT, 2040 units; LDH, 13,800 units; SGPT, 580 units; aldolase, 2,350 units. Each of these fell toward normal within several days.

Ischemic muscle exercise test was again performed, and serial venous samples demonstrated a normal rise in lactate, suggesting no impairment of glycogen breakdown.

His improvement was rapid with benzidine tests of the urine becoming negative on the third NIH day, or the sixth day of myoglobinuria. Concurrently, his muscle tenderness improved. Biopsy was not done because of rapid improvement, and he was discharged in eight days.[15]

Although his temperature had been elevated to 103 F prior to onset of myoglobinuria, allergic reaction to penicillin cannot be excluded as a factor.

The patient has been essentially well since that time, having a rare respiratory infection. During one such illness, myalgia lasting three days occurred with no myoglobinuria.

Comment

On the basis of the normal response to ischemic exercise tests with normal lactate production and the normal myoglobin analysis our patient's disease is not classifiable as an established entity. That he has the non-exertional variety is established by the lack of unusual exercise prior to his attacks and is corroborated by the normal family history as well as his ability to perform sustained activity. The term "toxic myoglobinuria" would be applied to our case, but this does little to describe the documented events, for he had two established attacks associated with febrile illnesses, one of which was associated with a rise in antibody to Influenza virus type A, and the other with an undiagnosed respiratory infection. However, in addition, a primary muscle disease may exist, not demonstrable by histological or histochemical studies, for he had pain and weakness in the arms and shoulders lasting for six months, following the performance of 100 push-ups. No myoglobinuria was recognized at that time. The fact that he was able to do 100 push-ups attests to his muscular strength.

That there are similarities and overlaps between the exertional and non-exertional types is clearly demonstrated by Bywaters' patient who had recurrent bouts of myoglobinuria produced by exercise, but a fatal episode produced by a streptococcal infection without associated exertion.[16] Boroian reported a patient who had the onset of myoglobinuria in association with a febrile illness which started one day after strenuous exercise.[17] On the other hand, Berg and Frankel describe a patient who had five attacks. Three of these were associated with febrile illness, and one followed elective surgery with temperature elevation to 100 F in the immediate postoperative period. The fifth episode was induced by intravenous administration of typhoid vaccine.[18] Our patient most closely resembles this case.

Prognosis in any patient who exhibits myoglobinuria associated with rhabdomyolysis is related to the classification. Of the non-exertional cases, most had one or two attacks, no further episodes, and no muscle atrophy.[6]

Our patient presented a different problem of renal management on each of his two attacks. In the first attack, there was a continuous massive diuresis and thirst requiring a large fluid intake. This was associated with a blood urea nitrogen which reached a maximum of 38 mg %. His clinical picture was similar to that which is seen in the diuretic phase following acute tubular necrosis, although he never demonstrated oliguria. In his second, and more mild attack, oliguria transiently occurred concurrent with development of massive fluid collection in the paravertebral areas. Diuresis, concurrent with mannitol administration, occurred and the derangement was of only short duration (48 hours). Renal problems associated with myoglobinuria are reviewed elsewhere.[7]

Summary

A patient with acute idiopathic recurrent rhabdomyolysis with myoglobinuria of the non-exertional type, is presented. One attack occurred in association with a febrile illness due to Influenza virus type A. The second attack was associated with an undiagnosed respiratory tract infection but an allergic reaction to penicillin cannot be excluded. The presence of myoglobin in the urine was established by electrophoresis and there was no defect of muscle glycogenolysis as demonstrated by ischemic exercise tests.

REFERENCES

1. Turell, D. J.: Primary myoglobinuria and exercise-induced secondary myoglobinuria: A report of 7 cases seen at Army basic training center, South. Med. J. 54:442, 1961.
2. Sett, R. F.: A case presentation: Postictal myoglobinuria, Ann. Int. Med. 55:647, 1961.
3. Acheson, D., and McAlpine, D.: Muscular dystrophy associated with paroxysmal myglobinuria and excessive excretion of ketosteroids, Lancet 2:372, 1953.
4. Berlin, R.: Haff disease in Sweden, Acta Med. Scandinav. 129: 560, 1948.
5. Bowden, D. H., Frazer, D., Jackson, S. H., and Walker, N. F.: Acute recurrent rhabdomyolysis (paroxsymal myohemoglobinuria.) Medicine, 35:335, 1956.
6. Korein, J., Codden, D. R., and Mowry, F. H.: The clinical syndrome of paroxysmal paralytic myoglobinuria, Neurology 9: 767, 1959.
7. McArdle, B.: Myopathy due to a defect in muscle glycogen breakdown. Clin. Sc. 10:13,1951.
8. Schmid, R. and Mahler, R.: Chronic progressive myopathy with myoglobinuria: demonstration of a glycogenolytic defect in the muscle. J. Clin. Invest. 38: 2044, 1959.
9. Hed, R., En familjar form av paroxysmal myoglobinurie, Nord. Med. 35:1586, 1947.
10. Scarpelli, D. G., Creider, M. H., and Frajola, W. J.: Idiopathic recurrent rhabdomyolysis, Am. J. Med. 34:426, 1963.
11. Wheby, M. S. and Miller, H. S.: Idiopathic myoglobinuria, Am. J. Med. 29:599, 1960.
12. Kossman, R. J., Camp, W. A., and Engle, R. I.: Idiopathic rhabdomyolysis with myoglobinuria, Am. J. Med. 34:558, 1963.
13. Whisnant, C. L., Jr., Owings, R. H., Cantrell, C. G., and Cooper, G. R.: Primary idiopathic myoglobinuria in a negro female: its implications and a new method of laboratory diagnosis, Ann. Int. Med. 51:140, 1959.
14. Kossman, R. J.: Personal communication, June 24, 1963.
15. Engel, W. K.: Personal communication, February 25, 1965.
16. Bywaters, E. G. L., and Dible, J. H.: Acute paralytic myohaemoglobinuria in man. J. Path. and Bacti. 55:7, 1943.
17. Boroian, T. V., and Atwood, C. R.: Myoglobinuria, J. Ped. 67:69, 1965.
18. Berg, P. and Frankel, E. P.: Myoglobinuria after spontaneous and induced fever, Ann. Int. Med. 48:380, 1959.

• A case report of this strange malady which continues to baffle the medical profession is presented with a ten-year followup.

FAMILIAL MEDITERRANEAN FEVER

William Vandervort, M.D.

Periodic disease has long intrigued physicians. Numerous case reports of cyclic episodes of fever, arthritis, peritonitis, pleuritis, leukocytosis, and dermatitis have all been reported by numerous investigators over the years. Reimann has been prominent in calling attention to these puzzling cases.[1,2,3,4] It was soon recognized that lumping the periodic diseases all together blocked scientific investigation. Various investigators felt that different etiologies and problems were being lumped together under this broad grouping of periodic disease. Bondy made an important investigation in separating Etiocholanolone Fever from the periodic group.[5]

Heller, Sohar and others[6,7,8] made a major contribution by describing several hundred cases from 1955 to the present of Familial Mediterranean Fever and proving it as a clinical entity. Most patients with Familial Mediterranean Fever originate from the area of the Eastern Mediterranean. Most described cases are non-Ashkenazic Jews. The disease usually had its onset between age 15 to 25. The literature is remarkable in that there are few cases still living beyond age 40. These patients experience attacks of temperatures from 100 to 103 degrees associated with abdominal pain, with rebound tenderness, hot swollen joints, and pleuritic pain. Temperature and abdominal pain are most common, pleuritis next and arthritis least. Each attack covers approximately two to three days and makes the patient so sick he is unable to work and likely to be bedfast. Aspirin is of little help. Antibiotics and steroids are of no help. Narcotics do decrease the pain. The attacks occur every few weeks to every few months with a varying pattern for each patient over the years. No cause has ever been found, nor reason discovered for the attack. Sohar has carefully worked out a genetic pattern for the disease.[9]

Case Report

A 35-year-old Jewish man from Iraq of Sephardic origin, lived in Iraq the first 11 years of his life and then traveled through Lebanon, England, France, Switzerland, Italy, Palestine, Egypt, Greece, Austria and Romania. He moved to the United States in 1955 and has been employed as a research chemist at the DuPont Company. In 1951 the patient had the sudden onset of abdominal pain in England and was operated on for acute appendicitis. The actual pathology report or sections of the specimen are unavailable for review. In 1953 he began having recurrent attacks of pain which have persisted to the present. His longest period free from an attack was 1955 to 1957 and March through November of 1958. Other than that, his at-

---

Dr. Vandervort is an Associate Member, Department of Medicine, Wilmington Medical Center.

tacks have occurred every two to four weeks. His earlier attacks started with lower right rib pain, the pain radiated to the tip of the right scapula with fever to 101 F, flatulence and constipation. The attack would last 36 to 48 hours. The earlier attacks were preceded by one to two days of fatigue and irritability. More recent attacks have been preceded by rectal urgency and excessive flatus. Within hours he develops tenderness and lower abdominal pain which radiates to the rectum. The pain may be crampy in nature. He usually goes to bed, becomes progressively worse, and turns pale. Nausea and occasional vomiting may then occur. He avoids eating while febrile. In general he was pain free between attacks but more recently he feels he does not quite recover between attacks as he did when the attacks first started.

I first admitted the patient to the Delaware Hospital Sept. 29, 1959, with crampy abdominal pain and temperature of 103 F. During that hospitalization the patient was a well-developed, well-nourished, pleasant, intelligent, alert, young man. The skull was normocephalic, the pupils were equal and reacted to light; eye grounds were normal. Ears, nose, and throat showed no evidence of infection; tonsils were absent. The teeth were in good condition. There was no goiter or adenopathy detected. The lungs were clear to examination. The heart was not enlarged. The blood pressure 130/80 and normal sinus rhythm of 80 with no murmurs present. The abdomen was flat and slightly tender to deep palpation; the bowels sounds are normal. There was no hepatosplenomegaly, no masses were felt. There was slight rebound tenderness. The genitalia were normal. The deep tendon reflexes were 2+ throughout. The peripheral pulses were equal throughout. The skin and mucous membrane revealed no pallor, icterus or cyanosis.

An intensive investigation was carried out during that two-week hospitalization. His hemoglobin was 15.3 grams, white count 7,500, 32 polymorphonuclear leukocytes, 52 lymphocytes and 16% immature polymorphonuclear leukocytes. The prothrombin time was 90%. Brucella agglutinin was negative. Total protein, 6.7 grams; albumin, 3.6 grams; globulin showed alpha$_1$, 1.29; alpha$_2$, .46; beta, .69; gamma, 1.60. Urinalysis was normal. Feces on three occasions were negative for ova and parasities. Random blood sugar, 63 milligrams percent; BUN 13, milligrams percent; cholesterol, 219 milligrams percent; direct bilirubin, .1; total, 5. BSP 2%, cephalin flocculation, 24 hours 1+; 48 hours, 2+; thymil turbidity, 1.4; alkaline phosphatase, 3.3 units. Intravenous pyelogram cholecystogram, gastrointestinal series, small bowel study, barium enema, and chest films were normal.

Repeat hemoglobin showed no change, reticulocyte counts were .6 and .8, white counts on occasion varies from 6,400 to 8,000 with a normal differential. The sedimentation rates 23 and 22, blood serology was non reactive. Coomb's test was negative, 3 lupus erythematosis preparations were negative. Repeat BUN was 14 milligrams percent and feasting sugar, 97 milligrams percent. Further bilirubin studies showed a direct of .16, a total of 2.2. Two days later, direct .16, a total of .97. Four days later, direct .10 and a total .43. SGOT was 8 units, urine for porphobilinogen was negative. I then made the diagnosis of Familial Mediterranean Fever.

I again admitted the patient to Delaware Hospital, January 22, '65, for further studies. At this time he had no change in his physical examination. His complete blood count, platelet count, coagulation and bleeding studies were normal. Urinalysis now showed 1+ albumin-urea with a few granular casts. Prothrombin time was 65%. Bilirubin .25 direct, total 1.5. The liver biopsy and rectal biopsy were performed by Dr. Louis Chipman. The sections showed no evidence of amyloid. Numerous repeat gallbladder studies, gastrointestinal series, small bowel, and barium enema, x-rays as an out-patient have all been normal.

The patient was seen at Yale University in consultation by Dr. Gerald Klatskin. Dr. Philip Bondy very kindly performed the alchohol infusion test that may precipitate an attack of Etiocholanolone Fever and this was negative. Dr. Bondy also gave intravenous steriods in an attempt to control an attack of fever and this was negative. Dr. Klatskin entertained the possibility of gallbladder disease as had Dr. Chipman previously. Dr. Bondy concurred in the diagnosis of Familial Mediterranean Fever, and the patient was advised to go to the National Institute of Health but refused.

The patient was seen in consultation by Henry L. Bockus on several occasions. Once he was admitted during an acute attack and carefully studied. All the routine and special x-rays were again normal. The bilirubin rise was again noted; enzymes did not rise and prothrombin studies were negative. Dr. Bockus felt that we had enough information to do a laparotomy.

The patient was seen in consultation by Dr. Robert Frelick in 1962. Careful study was performed as an out-patient and the important history noted that on several occasions when he had received antibiotics he had temporarily improved. However, no evidence of hemolytic disease or other causes for bilirubin elevation could be determined.

In the fall of 1965, while having his annual physical at work, it was casually mentioned by the company examiner that most people with this disease died from amyloidosis. This threw the patient into a period of great anxiety and panic. He flew to England to see Dr. Kenneth Maclean, the physician he had seen in 1951, and his family doctor. From England he flew to Israel to see Dr. Heller. Dr. Heller spent the large part of two days with the patient reviewing his record, examining him, giving some tests and concluding that he was a classical case of Familial Mediterranean Fever. He attempted to reassure the patient of his diagnosis and to reinforce the decision not to have a laparotomy. The patient, since that time, has felt more secure in his diagnosis but is still frustrated because there are no tests to prove the diagnosis but rather this is a diagnosis by exclusion. The patient was last seen in my office 5/16/67 appearing to be in good health. He has been having an attack about every two weeks for the past three years. He notes that his urine is dark after each attack and recently has noted several joints involved with his attack. In addition he has noted some eruption on his face one to two days prior to an attack. Advice given to him several years ago about fat precipitating attacks caused him to follow a low-fat diet for several years. The onset seemed to decrease the frequency of attacks, but this does not seem to be true anymore. It is my plan to study the patient periodically, and to do periodic biopsies for amyloid disease.

A Clinical Entity

Familial Mediterranean Fever now seems secure as a clinical entity. Sohar and Heller now have 470 cases in their Tel-Aviv series.[6] The etiology remains unknown; there is no effective treatment and the disease must be recognized by the total clinical picture because no diagnostic test is available. Laparotomy and biopsy specimens show only nonspecific inflammatory reactions.

Frensdorff[10] described the elevation of plasma fibrinogen in 71 patients with Familial Mediterranean Fever. Many of his patients showed an elevated plasma fibrinogen between attacks and the level has increased with attacks in those patients with peritonitis but not arthritis. Values to 1200-1500 milligrams were noted most often; my patient has never had levels this high.

Mellinkoff[11,12,13] described a dietary treatment for patients with Familial Mediterranean Fever. Some of his patients could precipitate attacks with a high fat diet and decrease the frequency of attacks with a low fat diet. This has not proved to hold true in Hellers' cases. My patient felt his attacks were originally decreased one third by a low fat diet but notices no difference now.

Heller[14] and Blum[15] have emphasized the development of amyloidosis in Familial Mediterranean Fever. Indeed renal involvement with amyloid is the chief cause of death in Familial Mediterranean Fever. Sediment changes and declining renal function herald the onset of amyloid disease. This diagnosis may be made by either rectal or renal biopsy.

Continued on Page 311

- **A sixty-three year old woman with chronic rheumatoid arthritis who developed H. influenzae, sinusitis, septicemia and pyarthrosis, is presented. She made a good recovery on appropriate antibiotic therapy.**

HAEMOPHILUS INFLUENZA

Sinusitis, Septicemia and Pyrathrosis in an Adult

Richard D. Pullen, M.D.

Haemophilus influenzae is a relatively uncommon infectious agent in adults, although it is a frequent pathogen in children. Further, pyarthrosis caused by *H. influenzae* is a rare entity in adults; a review of the literature is productive of only six cases. Dyer, Romansky and Holmes[1] were able to find only one case in an adult in reviewing the literature from 1899 to 1957, and added another case of their own. This patient had an accompanying meningitis; recovery occurred on appropriate medical therapy. In 1963, Meligrana, Hawks and Marotta[2] reported a case of septicemia with accompanying polyarthritis and meningitis in an adult. This patient was improving clinically until superinfection with septicemia due to *Staphylococcus aureus* intervened, resulting in a fatal outcome. A case of *H. influenzae* pyarthrosis with accompanying meningitis in a patient with rheumatoid arthritis was described by Norden and Seller[3] in 1964. This patient also improved with medical management. In 1964, Goldstein and Janoski[4] described a patient with pyarthrosis, who was treated with chemotherapy and open arthrotomy with clinical improvement. The sixth case was that reported by Patterson and Levine[5] in 1965. This was a patient with pyarthrosis and septicemia who responded to arthrotomy and antibiotic therapy. The case to be discussed in this report concerns a seventh patient, a woman with rheumatoid arthritis who developed sinusitis, septicemia and pyarthrosis, and who responded well to antibiotic therapy.

This sixty-three-year old white woman, a known rheumatoid arthritic of five or six years duration, was admitted to the Hartford Hospital with a six-hour history of fever, abdominal pain, and left knee pain. She had been working in her usual state of very functional capacity, and had been taking aspirin and Indocin (indomethacin) prior to the onset of her present illness. She was also mildly anemic, with a hematocrit of 36, and was taking an oral iron preparation for correction of the anemia. She had a chronic sinus infection of many years duration and had noted a thickening of her nasal secretion for two or three weeks prior to admission.

On admission, the patient was ashen in color and apparently acutely ill, with a temperature of 100.4 F. There was a sinus tachycardia, grade II/VI systolic precordial murmur, and dullness and fine rales were noted at the right lung base posteriorly. The abdomen was essentially negative to physical

---

Dr. Pullen now practices in Windsor, Connecticut, and is associated with the Hartford Hospital, Hartford, Connecticut.

examination. There was fusiform swelling of the metacarpal pharyngeal joints. Examination of the left knee revealed a tense, tender joint area; no redness was observed. There was definite restriction of motion and evidence of a suprapatellar effusion. A chest x-ray showed elevation of the right dome of the diaphragm due to an old injury, but no infiltration was noted. An electrocardiogram showed sinus tachycardia with slight ischemia, probably due in part to the rate. Sinus x-ray revealed evidence of congestion and mucous thickening of the maxillary antrum and probably in some of the ethmoid cells. X-ray of the knee revealed evidence of an effusion with no bony abnormalities and no osteomyelitis reported. Laboratory data revealed a hematocrit of 36%, a white blood count of 7,900 per mm^3 with a normal differential. A two-hour post-prandial blood sugar was 120 mg%; sodium was 127 mEq/liter; potassium, 2.9 mg%; chloride, 86 mg%; CO_2, 29 mEq/liter; BUN, 21 mEq/liter. Urinalysis was normal; the SGOT was 14; the SGTP was 5; LDH, 18; amylase, 3; alkaline phosphatase, 49 (international units); prothrombin time, normal range; VDRL negative; bilirubin, 0.06 mg% direct and 0.2 mg% total; latex fixation, 1 to 8 dilution, positive. An examination of the bone marrow revealed normal hematopoiesis, but stainable iron was absent. An LE preparation was negative. The left knee was aspirated and purulent joint fluid was obtained on which a smear was inadvertently not done.

Further Data

A determination of sugar of the joint effusion was reported as 47%. Cultures from the blood, joint effusion, and nasal secretions revealed the presence of *H. influenzae*, Type B, with the following antibiogram: resistant to penicillin, ampicillin, streptomycin, susceptible to tetracycline, chloramphenicol, colistimethate sodium. She was started initially on penicillin, 600,000 units intramuscularly, every eight hours; this was given for three days. When the cultures revealed *H. influenzae*, this was changed to tetracycline, 500 mg orally every six hours. The patient continued to run an elevated temperature; after 48 hours this was changed to colistimethate sodium, 100 mg intramuscularly, every eight hours, because of the onset of diarrhea. The colistimethate was continued for nine days. On the eighth day, the patient began to show a gradual elevation of her BUN. Hence her therapy again was changed to tetracycline, 500 mg orally every six hours for one day, then 250 mg every six hours. The temperature gradually became normal while on the colistimethate sodium, and the joint fluid gradually cleared of its turbidity. In addition, the abnormal chest findings on ausculation cleared progressively during this period of time. Her BUN gradually rose to 46 and then dropped to normal. She was discharged after three weeks in the hospital to a rest program at home, including instructions of no weight bearing, and for her to use crutches. The patient was continued on oral tetracycline, 250 mg four times daily, for a total of six weeks. She gradually became more mobile and at the date of this writing (5 months after the onset) she is back to essentially full time activity and has returned to work.

Discussion

Haemophilus influenzae pyarthrosis has a very serious potential for infection in adults, particularly because of its infrequent occurrence. Initial handling of the aspirated fluid is particularly important, since the results may be very misleading if the gram staining procedure is not done properly. This may lead to erroneous identification of *H. influenzae* as a gram-positive organism and an incorrect diagnosis and inappropriate therapy. Patients with chronic rheumatoid arthritis have a higher incidence of suppurative arthritis than those existing in the general population. Hence, any patient with this syndrome who presents with a sudden increase of joint pain and fever must be viewed with a high index of suspicion. This is particularly true when physical examination does not reveal definite evidence of inflammation of the joint, as was the situation with the present case.

The mode of therapy varied in the reported seven cases. The first six were seen in the pre-antibiotic era (1938) and were treated by arthrotomy only. Two others[4,5] received arthrotomy and chemotherapy only. One fatality occurred due to a superimposed infection with *S. aureus.*

Of interest was the lack of leukocytosis in the present case. Initially, it was felt that this might represent a reaction due to her preceding therapy with Indocin; however, the bone marrow revealed normal hematopoiesis except for the absence of stainable iron. A similar absence of leukocytosis was present in the case reported by Patterson and Levine,[5] where the white blood cell count was 9,050.

Haemophilus influenzae pyarthrosis has three potential origins: (1) Secondary to septicemia; (2) direct entrance secondary to trauma, and (3) direct extension from adjacent infected areas. The present case, in all probablity, represents that secondary to septicemia, with the septicemia being secondary to sinusitis.

REFERENCES

1. Dyer, R. F., Romansky, M. J., and Holmes, J. R.: Hemophilus Pyarthrosis in an Adult, Arch. Int. Med., 102:580, 1958.
2. Meligrana, F., Hawks, H., and Marotta. T.: Hemophilus influenzae Septicemia with Polyarthritis and Meningitis in an Adult, Canad. Med. Ass. J., 89:132, 1963.
3. Norden, C. W., and Sellers, T. F.: Hemophilus influenzae Pyarthrosis in an Adult, JA.M.A., 189:694, 1964.
4. Goldstein, E., and Janoski, A. H.: Hemophilus influenzae Pyarthrosis in an Adult, Arch, Int. Med., 114:647, 1964.
5. Patterson, R. L., Jr., and Levine, D. B.: Hemophilus influenzae Pyarthrosis in an Adult. J. Bone and Jt. Surg., 47:1250, 1965.
6. Weaver, J. B., and Sherwood, L.: Hematogenous Pyarthrosis Due to Bacillus Hemophilus influenzae and Corynebacterium Xerosis, Surg. 4:908, 1938.

FAMILIAL MEDITERRANEAN FEVER

Continued from Page 308

To date my patient has not revealed amyloidosis. It is felt that the occurrence of this complication limits the life span of these cases to approximately 40 years.

Genetic evaluation has led Sohar[9] and Heller[6] to describe a single recessive autosomal gene as the inherited trait. However, its male predominance 3:2 is difficult to explain on this basis alone. The thought that amyloidosis and Familial Mediterranean Fever may be inherited separately has been considered but felt unlikely. The reasoning for the two gene theory is based on the higher incidence of amyloidosis in Tel-Aviv than is Los Angeles in Familial Mediterranean Fever patients. Further evidence for this theory is the occurrence of amyloidosis as the only manifestation of Familial Mediterranean Fever in members of families afflicted with classical Familial Mediterranean Fever.

Familial Mediterranean Fever has been discussed as a clinical entity. It is felt to represent one of the periodic diseases. Most cases are found in the Eastern Mediterranean and occurs in non-Ashkenazic Jews. The cause and treatment of this strange malady continues to intrigue physicians.

REFERENCES

1. Reimann, H. A.: Periodic disease. Probable syndrome including periodic fever, benign paroxysmal peritonitis, cyclic neutropenia, and intermittent arthralgia. J.A.M.A., 136:239, 1948.
2. Reimann, H. A.: Periodic disease. Periodic fever, periodic abdominalgia, cyclic neutropenia, intermittent arthralgia, angioneurotic edema, anaphylactoid purpura and periodi cparalysis. J.A.M.A., 141:175, 1949.
3. Reimann, H. A.: Periodic fever, an entity. A collection of 52 cases. Am. J. M. Sc., 243:162, 1962.
4. Reimann, H. A.: Periodicity in disease. New England J. Med., 256:652, 1957.
5. Bondy, P. K., Cohn, G. L. and Gregory, P. B.: Etiocholanolone fever. Medicine, 44:249, 1965.
6. Sohar, Ezra, Garni, Joseph, Pras, Mordehai, and Heller, Harry: Familial Mediterranean Fever. A survey of 470 cases and review of the literature. Volume 43, 1967.
7. Heller, H., Sohar, E. and Sherf, L.: Familial Mediterranean Fever. Arch. Int. Med., 102:50, 1958.
8. Ehrenfeld, E. N., Eliakim, M. and Rachmilewitz, M.: Recurrent polyserositis (Familial Mediterranean Fever; periodic disease). A report of fifty-five cases. Am. J. Med., 31:107, 1961.
9. Sohar, E., Pras, M., Heller, J. and Heller, H.: Genetics of Familial Mediterranean Fever, Arch. Int. Med., 107:529, 1961.
10. Prensdorff, A., Sohar, E. and Heller, H.: Plasma fibrinogen in Familial Mediterranean Fever. Ann. Int. Med., 55:448, 1961.
11. Mellinkoff, S. M., Schwabe, A. D. and Lawrence, J. S.: A dietary treatment for Familial Mediterranean Fever. Arch. Int. Med., 108:80, 1961.
12. Personal Communication (Mellinkoff)
13. Mellinkoff. S. M., Snodgrass, R. W., Schwabe, A. D., Mead, J. M., Weimer. H. E. and Frankland, M.: Familial Mediterranean Fever. Plasma protein abnormalties, low-fat diet, and possible implications in pathogenesis. Ann. Int. Med., 56:171, 1962.
14. Heller, H., Sohar, E., Grant, J. and Heller, J.: Amyloidosis in Familial Mediterranean Fever. Arch. Int. Med., 107:529, 1961.
15. Blum, A., Gafni, J., Sohar, E., Shibolet. S. and Heller, H.: Amyloidosis as the sole manifestation of Familial Mediterranean Fever (FMF). Ann. Int. Med., 57:795, 1962.

President's Page

SOME COMMENTS ON RIGHTS AND PRIVILEGES

In discussing rights and privileges, as applied to medical care, it is interesting to note it was concomitant with the spread of early Christianity that the practice of ministering to human suffering on an extended scale became a guiding principle of society. Believers established, very early, the rule that each community should assume the responsibility of looking after the sick, poor, the orphans, the widow and the infirm, no matter what the state of their reason. Thus the healing ministry was considered an integral part of community work and an obligation.

Interest in health care as a right or a privilege was stimulated when our new A.M.A. President, Dr. Milford O. Rouse, warned the House of Delegates recently that, "*We are faced with the concept of health care as a right rather than a privilege.*" Some A.M.A. critics both inside and outside the profession took this remark as a sign that organized medicine was reassuming an old posture. The lay press, as well as writers within the profession concluded that after several years of moderately progressive leadership, we are about to resume a long, futile rear-guard struggle that marked our approach to socio-medical developments for so many years prior to the enactment of Medicare in 1965.

Whatever Dr. Rouse may have had in mind in suggesting a distinction between the right to have health care and the privilege of receiving it, one can be certain that neither he nor any other member of the A.M.A. would withhold his own professional services from any fellow being in need of medical care, for any reason whatever.

Physicians immemorially have looked upon the right to practice medicine "symbolized by the academic degree and the license given us by this State" as a privilege and a precious one at that. We, along with all our other fellow citizens, not only concede that access to medical care has become recognized as a basic human right; indeed we would insist upon this concept, for we are proud of the fact that our services are now so highly valued that most people look upon medical care as an essential element of life along with food, shelter, education and transportation.

Perhaps what Dr. Rouse really meant to say, and what seems to us so important to say again these days, is that the right to have medical care when one needs it, like all other rights in our society, is balanced by the responsibility to use it wisely and to nurture and support the sources of medical art and science.

We think the controversy over Dr. Rouse's remark is an unfortunate episode, semantic in nature, illustrating, if anything, that we not only have to serve the people but we must also learn to communicate with them.

It has been my privilege to serve as President of this Society for the past year. I am grateful for having had this opportunity and I wish at this time to express my appreciation to the Council, to the Committee Chairmen and their members, to the Executive Secretary and her staff for their most gracious and complete cooperation.

H. Thomas McGuire

Delaware Medical Journal

NOVEMBER, 1967
VOLUME 39
NUMBER 11

THE MEDICARE PROGRAM

PAST - PRESENT - FUTURE

One Physician's Viewpoint

William O. Lamotte, Jr., M.D.

More than a year ago, as Medicare became a reality, the physicians of this state and of the nation for the most part settled down to help what they considered to be a bad law become as effective as possible in helping those it was intended to benefit. This cooperation is continuing and probably increasing, although a year later the feeling persists that any government program to finance health care for a whole segment of the population without regard to financial need is morally and fiscally unsound; and one that is centrally controlled, operated, and regulated can only eliminate the flexibility, freedom, and individuality necessary for the quality health care alleged to be a goal of this type of program.

No doubt many oldsters have been financially aided by Medicare. We read that in Delaware it has been a seven million dollar success, while nationwide the first year cost has been over three billion dollars. Does this colossal expenditure necessarily make it good and wise? Could not even more have been done with the same or fewer dollars for those who needed the help if the myth of entitlement to government largesse had not been extended to the entire over-65 population? Could not extension of our public assistance health programs to the financially needy of all ages together with expansion and growth of our voluntary health insurance industry have arrived at an even better solution to the problem of financing health care? The ever-rising costs of Medicare must result in either or all of the following: 1) Increased taxes to support it; 2) Decrease in benefits to be offered; 3) More and more controls, regulations, and interference with the health industry and with the practice of medicine. "It is hardly lack of due process for the government to regulate that which it subsidizes." There is a point of diminishing returns when regulations and controls interfere with the individual patient-physician contract — quality of care inevitably suffers.

What are some of the specific problems as physicians see them, over and above the philosophic objections, and in addition to the manifest fiscal unreality of trying to extend government beneficence to everyone?

Hospital Problems

The estimated 15 to 20% increase of admissions to hospitals of Medicare recipients has had its effect upon availablity of hospital beds, in spite of disclaimers to the contrary by Medicare apologists. It is distinctly more difficult to find a hospital bed today than it was a year ago.

Dr. LaMotte is a Member of the Council on Legislative Activities, AMA; Chairman of the Medical Advisory Committee, Department of Public Welfare.

The hospital people inform us that in many areas the payment arrangements with Medicare do not adequately cover the costs, and some American Hospital Association spokesmen have implied that these losses may force some hospitals to terminate their Medicare contracts.

So-called hospital-based physicians such as radiologists and pathologists have been hemmed in by regulations requiring a split between their professional and non-professional duties to the extent that chaotic and administratively expensive problems have resulted in many areas.

The handling of outpatient hospital diagnostic and therapeutic services has been complicated by impossible certification requirements, cross-overs of deductibles between Part A and Part B, and many occasions where the professional charge has been considerably less than the administrative processing cost.

Every patient admitted to a hospital under Medicare must have a specific certification of necessity signed by the physician. This is considered by many physicians to be onerous and degrading, since the very fact of the admission of the patient attests to the physician's judgment that the admission is necessary. This requirement goes beyond the contention that Medicare is a method of financing health care and not a scheme to alter the normal practices of medicine and hospital care.

Problems of the Fiscal Intermediary and Carrier

In Delaware we are fortunate in having Blue Cross-Blue Shield of Delaware serving as both fiscal intermediary for the hospital portion of Medicare and as carrier for the supplementary medical and surgical portion. This organization has had many years of experience in dealing with the providers of health service in Delaware. Yet its performance in the Medicare program has not been problem-free. Like many of its counterparts in other states, it has until recently been quite far behind in its payments to both hospitals and physicians. The organization has had a large problem of recruitment of new employees to work in its government department. Forms and communications sent out by the carrier with wording dictated by the SSA have appeared to be biased and occasionally erroneous.

The carrier has had many problems in dealing with an area of coverage with which it had had little previous experience; namely, the payment for physicians' services in home and office.

The carrier has been too willing to acquiesce to pressures from the government to carry out the latter's ideas of how to smooth out administrative problems, when really as a carrier, it should have equal responsibility to the government, the providers of health services, and the public.

In spite of all these problems, Blue Cross-Blue Shield will serve as an effective buffer between government and providers of health services, and can count on the help of the medical profession to achieve improved performances in its role.

Problems of the Physician in His Office

Patients for the most part are confused by the details of Medicare. Most conscientious physicians and their staffs do what they can to alleviate this confusion, but resent in many cases the intrusion of such matters into time which could be better spent on improved patient care. Furthermore, neither the time nor money spent on completion of forms is conducive to improving the attitudes of physicians toward Medicare.

Most physicians believe that their responsibility to their patients is reinforced by an appreciation on the part of the patient that he too has a responsibility to the physician; namely, to pay a reasonable fee for service rendered. This is why many physicians insist that under Medicare the patient pay the physician when able to do so and then recover from Medicare all or part of his expenses. This is recognized in the law as a choice open to physicians, and is consistant with the definition provided by the Social Security Administration that Medicare is a plan to *reimburse* the patient for a portion of his health expenses. Yet because it is administratively easier to process claims which the physician sends directly to the carrier (and for other subtle reasons), physicians have been bombarded by both government and by carriers with propaganda to induce them to use a claim method which undermines an essential foundation stone of the physician-patient relationship, and one which was not the intention of the law to impose by regulation, control, or coercion.

The intention of the medical profession is to continue to do its part to try to make this program work, and at the same time attempt to preserve essential values which are the foundation of quality health care. Simultaneously it will offer its knowledge to and exert its influence on government legislators and administrators so that, hopefully, any changes in the Medicare law will be in the direction of disentanglements from present chaotic administrative and regulatory complications, and not in the direction of expansion of a program which has not revealed its true cost or impact in its present form.

For many months the committee on Ways and Means of the United States House of Representatives has been considering proposed changes in social security financing and benefits, including changes in the Medicare law.

On August 2, 1967, the committee submitted to the House the results of its deliberations, and on the following day a new bill, HR 12080, was introduced by Congressman Mills which reflects the changes recommended by the committee on Ways and Means, subsequently passed without amendment by the House.

For the most part, pressures to expand the program have been resisted. For example, expansion of Medicare to the disabled of all ages has not been included, but instead the legislation recommends a special advisory commission to study the problem and probable costs related to the possible future coverage of such a group.

There were also great pressures on the committee to expand the scope of benefits from other providers of services such as chiropractors and optometrists, but instead the secretary of HEW is to conduct a study of the feasibility and desirability of including "allied medical services" under Part B of Medicare.

These conclusions are commendable and show a recognition by the committee that this program is too young and too costly to embark upon significant expansion either in the direction of covering other age groups or of increased scope of benefits.

One benefit that the legislation does propose to increase is the number of hospital days to be covered. Present law limits coverage to 90 days; the proposed law would increase them to 120 days, with the requirement that after 90 days, the patient must be responsible for half the daily cost.

Many of the problems referred to earlier in this discussion have received favorable attention in this proposed legislation.

At the present time, if a physician and his patient choose to deal with each other directly in regard to payment, the patient can not be reimbursed by Medicare unless he submits to the carrier a receipted bill. This could conceivably exert a hardship on some patients, or force the physician to deal directly with the government and thus compromise his stand on the principle of individual responsibility. The proposal is to offer a third option to the two parties; namely, that of the "itemized bill," which the patient can present for payment by Medicare, and having received payment, then pay that portion of the physician's bill he was unable to pay out of pocket. This additional option should add a great deal of flexilibity to the program and help avoid many of the problems which have developed without it.

The proposed legislation recommends elimation of the requirement of initial physician certification for hospitalization, helps straighten out some of the chaotic administrative problems of hospital out-patient diagnostic services, improves the present confusing relationship between hospital based pathologists and radiologists and the hospitals in which they serve, and in general addresses itself favorably to many of the problems previously discussed. It is hoped that the Senate will be as objective and as sensible in these matters as has been the House of Representatives.

It cannot be left out, however, that the proposed legislation not only recognizes the need for additional financing of a very expensive Medicare program, but also additional financing of proposed increases in cash benefits for social security beneficiaries. It is estimated that these additional cash benefits will amount annually to $3,226,000,000 and the major thrust for financing this and the Medicare costs is an increase in the taxable wage base from the present $6600 to $7600 beginning January, 1968. One cannot escalate benefits, whether cash or health service, without escalating the cost to the taxpayer. whether he be employee, employer, or self employed. The Social Security Administration has a fine record of estimating the cost of cash benefits, but is finding that health benefit costs are not susceptible to the same accurate estimates. Once again, the three avenues available to approach this problem are ever increasing taxes, to be minimized only by ever-increasing controls and regulations, or by restraint in expansion of an already mammoth program. Before the taxes become too great, and before the controls and regulations become too onerous, some consideration should be given to a gradual change from the present philosophy of entitlement, to a philosophy in some way related to the financial need of the patient.

AMERICAN COLLEGE OF PHYSICIANS

The December meetings sponsored by the ACP in their scientific regional program will be held at the following locations:

Texas Regional, San Antonio, Tex., Dec. 1. INFO: Hatch W. Cummings, Jr., M.D., 6410 Fannin St., Houston, Tex.

New Mexico Regional, Albuquerque, N. M., Dec. 1-2. INFO: Reginald H. Fitz, M.D., 900 Stanford Dr., N.E., Albuequerque, N.M.

Maryland/D.C. Regional, Baltimore, Md., Dec. 2. INFO: Martin L. Singewald, M.D., 11 E. Chase St., Baltimore, Md.

North Carolina Regional, Durham, N.C., Dec. 7-9. INFO: Monroe T. Gilmour, M.D., 1351 Durwood Dr., Charlotte, N. C.

Arizona Regional, Tucson, Ariz., Dec. 9. INFOF: Hayes W. Caldwell, M.D., 550 W. Thomas Rd., Phoenix, Ariz.

NEW PUBLICATION AND FILMS

"Talking Books" that the Library of Congress has supplied to the blind for nearly 34 years is now available to those with other physical handicaps. A patient who is paralyzed, lacks muscle or nerve coordination, or is confined to an iron lung can now use the free service by sending a brief statement by his doctor certifying the disability to the library or to one of the 34 cooperating regional libraries. He may borrow both books and a phonograph. Catalogues of books available and information may be obtained from the Division for the Blind and Physically Handicapped, Library of Congress, Washington, D. C. 20540.

ACUTE IRON INTOXICATION

Case Report — Treatment

● The mortality rate in acute iron poisoning in children has remained a frustrating 50 percent in spite of therapy. A method of treatment utilizing a recently developed chelating agent in conjunction with exchange transfusions is presented. Results thus far have been encouraging.

Edwin C. Katzman, M.D.
W. Arthur Burke, B.Sc.

Many physicians are not aware of the seriousness of poisoning with the ferrous and ferric salts of iron. Ferrous sulfate, generally considered an innocuous drug, is universally prescribed, and with little restraint. Many preparations are attractively colored and look much like candy. This is especially true in England, where the frequency of acute iron intoxication exceeds that of aspirin as a cause of poisoning in children, and is equal to aspirin poisoning in the United States.[1,2]

Accidental iron poisoning in children was first reported by Forbes[3] in 1947. He described the clinical symptoms and pathologic findings of two fatal cases of ferrous sulfate intoxication and included an experimental study of the toxicity of large doses of various iron compounds. Since that time, many reports of both fatal and non-fatal poisonings have appeared in the literature, nearly all involving children following ingestion of ferrous sulfate tablets.[1,4-9]

A review of the literature reveals that most cases occur in children between the ages of 10 and 30 months, with 75% between 12 and 25 months. Ferrous sulfate is the agent most commonly ingested. In children, a total dose of 3 to 10 grams can cause severe toxicity and death, but as much as 15 grams has been taken with subsequent recovery.[10,11] As little as one gram can cause toxic symptoms. It has been estimated that the ingestion of 900 mg of ferrous sulfate per kg of body weight is fatal for man.[5]

Until recently, the results of therapy for acute iron poisoning have been disappointing, with a mortality rate of 50%, despite the use of exchange transfusions, BAL and chelating agents. Two chelating agents, ethylenediamine tetra-acetic acid (EDTA), and diethylenetriamine penta-acetic acid (DTPA), have not significantly reduced the mortality in acute experimental iron poisoning.[1]

Recently, a new chelating agent, Deferoxamine,* has been developed. It appears to have a stronger affinity for iron than either EDTA or DTPA, and has shown great promise in the treatment of both acute iron intoxication and chronic hypersiderosis.[14]

It is the purpose of this report to present our experience with the use of Deferoxamine (henceforth referred to as DFOM) in conjunction with exchange transfusions in the treatment of acute iron poisoning in a young child.

Case Report

A 19 month old Negro boy was admitted to the Delaware Division, Wilmington Medical Center, on March 15, 1967, approximately 1½ to 2 hours after ingesting an estimated

---

Dr. Katzman was formerly resident in Pediatrics, Delaware Division Wilmington Medical Center and is now in private practice in Newark. Mr. Burke is with the Department of Pharmacy, Delaware Division.

45 to 50 ferrous sulfate tablets, each containing 300 mg of ferrous sulfate. These were prescribed for the patient's mother at the prenatal clinic that same day. One hour later he became irritable, complained of abdominal pain, and vomited a large amount of greenish material. He then became lethargic and tachypneic with the onset of diarrhea. He was brought to the emergency room in a stuperous state, unable to recognize members of his family. Blood pressure was 90/60; respirations, 52/minute; pulse, 140/min. and thready. The temperature was 100.4 F. He soon became comatose. The pupils were equal and reactive to light, corneal reflexes were intact, and fundascopic examination revealed no abnormalities. The mouth and throat contained excess saliva with vomitus still in the pharynx; the mucous membranes were a dull red. The chest was clear, and the abdomen was soft with hyper-active bowel sounds. There was no spontaneous movement; deep tendon reflexes were active, and no pathological reflexes could be elicited.

Laboratory data

Hemoglobin, 12.2 gm; Hematocrit, 43%; WBC, 20,500, with a shift to the left; CO_2, 7 mEq/liter; C1, 114; Na., 139; Pot., 5.1; calcium, 10.8 mg; alkaline phosphatase, 19 Bodansky units; SGPT, 60 units; BUN, 32 mg%; blood sugar, 225 mg%; creatinine, 0.8 mg%; serum iron, 2,450 mcg% (normal is 50-150).

The child was given intravenous fluids and 5 grams of DFOM was placed into the stomach via nasogastric tube following thorough gastric lavage with 1% sodium bicarbonate. One hour later, an additional 1 gram of DFOM was administered intravenously in 250cc of 5% Dextrose and saline over a 2 hour period. Sodium bicarbonate was added to the IV solution to correct the acidosis. That same evening (2 hours later), another 2 grams of DFOM was infused via the nasogastric tube into the stomach. The urine had now turned a deep red color.

By the following morning (12 hours post ingestion) the child became more responsive. He was sitting up, looking around, and appeared to be much improved. In a short time, however, his respiratory rate increased, with costal retractions and coarse rales becoming audible over the right side of the chest. An x-ray showed a right lower lobe infiltrate, felt to be aspiration pneumonitis secondary to vomiting while comatose. He was started on ampicillin therapy, 100 mg/kg/day intravenously in six divided doses. Additional laboratory studies at this time were as follows: prothrombin time, 40%; serum iron, 1002 mcg%. Five mg of vitamin K_1 was given. Later that day his condition seemed to worsen with progressive abdominal distention, vomiting, and diarrhea along with hepatomegaly, peripheral edema and increasing stupor. Another 1 gram of DFOM was given intravenously. In spite of this, the child's condition continued to deteriorate. Progressive oliguria ensued, with the sudden onset of grand mal seizures, and intermittent decerebrate posturing, inadequately controlled with anticonvulsants.

An Exchange Transfusion

At this time, it was decided to carry out an exchange transfusion preceded by endotracheal intubation and cannulation of the saphenous vein. Thereupon, a total volume of 1600cc of whole blood was exchanged in 50cc increments, the entire procedure requiring 2 hours; 11.8cc of calcium gluconate was given during the procedure. During the exchange, the patient exhibited remarkable clinical improvement, with cessation of convulsions and loss of decerebate rigidity. Response to pain was evident at the end of the procedure.

The pre-exchange serum iron was 300 mcg%, calcium was 10.1 mgm; post-exchange values were 173 mcg% and 13.5 mgm, respectively. Serum proteins, hemoglobin and electrolytes remained essentially unchanged. The patient was very much improved the following morning, with no evidence of neurological deficit. The remainder of his hospitalization was marked by gradual and uneventful recovery with return of the serum iron to normal (122 mcg%) following a rebound to 185 mcg%, 6 hours post-exchange.

At this writing, the patient is now 8 weeks post ingestion. There has been no vomiting or other signs of gastrointestinal obstruction, and the hemoglobin has remained stable. An upper G. I. series at 7 weeks revealed no evidence of pyloric stenosis or scarring elsewhere in the intestinal tract.

The present case history is typical of that described in the majority of reports of acute iron toxicity. Characteristically, the child is a toddler 12 to 24 months of age who finds a bottle or box of iron tablets carelessly left within reach by his mother, for whom they were prescribed. The lure of the colored tables which look so much like candy tempts the child to eat a variable number before being stopped by his parents, or, more often, by the onset of vomiting. Most mothers interviewed did not think of the iron as being poisonous, but looked on such medications as "health promoting" agents. In numerous fatal or near fatal cases, this was a prime reason for delay in therapy.

Toxicity

Classically, four stages of the toxic effects of large amounts of iron compounds are described. The first stage usually appears 30 to 60 minutes after ingestion, with abdominal pain, vomiting, irritability, pallor and drowsiness, together with frequent black or bloody stools. Symptoms of acidosis and cardiovascular collapse may become prominent, which may lead to coma and death within 4 to 6 hours. During the period of coma, aspiration of vomitus becomes a threat. An estimated 20% of patients succumb during this period.[5] Following this, there is a "period of improvement," lasting approximately 6 to 20 hours, in which there is decreased vomiting, diarrhea and acidosis and the patient appears considerably improved. Occasionally, the child goes on to complete recovery, but, more often, this false sense of security is dispelled by the onset of the third stage which is characterized by convulsions, progressive cardiovascular collapse, fever, coma, and death. If this crisis is surmounted, a fourth stage is likely to occur 3 to 6 weeks after ingestion, consisting of gastrointestinal obstruction (primarily pyloric) from extensive scarring.[15] Wilmers and Heriot[16] reported five cases of severe pyloric obstruction requiring gastroenterostomy in 22 cases reviewed. In these five cases, the entire stomach wall was thickened and edematous, causing a narrowing and abstruction of the pyloric canal. All layers of the stomach were inflamed and thickened.

Pathophysiology

The signs and symptoms of acute toxicity with ferrous sulfate are due to a number of complex factors including (1) the direct effects of the iron on the gastrointestinal mucosa, (2) deranged blood coagulation mechanisms, (3) metabolic acidosis, (4) shock, and (5) central nervous system changes. Animal experiments and necropsy material from fatal cases have shed some light on the pathophysiology, but there still remain many unanswered questions.

Vomiting and hematemesis apparently are due to the rapidly occurring necrosis of the stomach, where iron absorption may take place. The gastric mucosa of animals experimentally poisoned with large doses of ferrous sulfate showed swelling and hemorrhagic erosions with bleeding into the gastrointestinal tract. The mucosa and vessels were diffusely impregnated with iron pigments.[14] From animal experiments and numerous clinical reports, it appears evident that the process of repair following the intense hemorrhagic gastritis would lead to fibrosis and contracture of the pyloric antrum and eventually to pyloric stenosis.

Shock, which may follow gastrointestinal bleeding, is a result of decreased cardiac output due to decreased venous return caused by blood loss, capillary dilatation and increased capillary permeability with a resultant shift of plasma volume into the extracellular spaces.[10] Studies have shown that ferritin, which appears to be a vasodilator substance, may be released in large quantities from the ulcerated intestinal mucosa and damaged liver cells. Ferritin has also been found in the blood of animals in shock.[12]

Hepatic and renal lesions are variable, the most common described being mild degenerative changes (cloudy swelling). Hemorrhagic effusions are found in the pleura and in the lungs. It has been shown that a transient but profound alteration takes place in the alveolar walls, leading to an exudate. Secondary infection with the threat of bronchopneumonia is evident.

Despite obvious involvement of the central nervous system in fatal and severe non-fatal cases, autopsies have revealed no satisfactory explanation histologically. Bleeding into the brain has never been noted, nor has iron pigment ever been demonstrated in the brain.[17] In two surviving patients who became comatose with serum iron levels greater than 5000 mcg%, the spinal fluid obtained at 24 and 42 hours after ingestion was in no way abnormal.[18] Jacobs[12] suggests that the lethargy and coma may be due to decreased cerebral perfusion due, in turn, to decreased cardiac output, as well as to the unexplained effects of iron directly on the nervous system.

Smith, Jones and Cochran[17] reported that in a fatal case of ferrous sulfate poisoning, the blood in the heart remained unclotted for five hours after death. In a series of animal toxicity experiments, the most striking hematologic observation was a prolonged coagulation time in all rabbits receiving 400 mg or more of iron per kg of body weight. It was noticed that the coagulation time increased proportionally to the levels of serum iron. The blood did not clot in 48 hours in one animal receiving 600 mg/kg of body weight. The principal cause was felt to be due to a chemical change in the fibrinogen, causing a defective fibrin clot as well as a prolongation of the coagulation time. The thrombocytopenia and hypoprothrombinemia that occur appear to play a secondary role.[19]

The metabolic acidosis observed in all reported cases is thought to be secondary to the conversion of ferrous iron to ferric iron in the plasma. Iron is absorbed in the ferrous form, but when its concentration in the plasma exceeds the total iron binding capacity, it is converted in the blood to the ferric form, with the formation of ferric hydroxide and a resultant increase in hydrogen iron concentration.[10]

Treatment

Before outlining a method of treatment for acute iron intoxication, we must mention that thus far there have been no definite criteria established for determining before treatment whether circulatory collapse or CNS depression will occur. We, therefore, urge that specific and supportive therapy be instituted immediately without awaiting results of the serum iron level, because (1) DFOM has been shown to be very well tolerated without significent toxicity; (2) delay in instituting treatment may be costly in terms of increased iron absorption; (3) the serum iron concentration may not always be a good index of the severity of intoxication. With these facts in mind,the following method of treatment is suggested:

1. Induce vomiting with syrup of Ipecac (15cc).
2. Gastric lavage until returns are clear, using 1% sodium bicarbonate and a large bore tube.
3. DFOM, 4000-8000 mg instilled into the stomach through the nasogastric tube following lavage.
4. DFOM, 2 grams in 500 ml of Dextrose/Water intravenously over a 6 hour period. If the urine turns a reddish color (vin rose), give a second course using 1 gram in 250 ml over a 2 to 3 hour period, or ½ to 1 gram intramuscularly. The choice of fluids should be dictated by serum electrolyte values. The intramuscular route may be superior to IV in a child who is alert without evidence of circulatory collapse.
5. Correct acidosis and dehydration.
6. Treat shock. Type and cross match for blood if needed.
7. If renal function is inadequate, and condition remains serious, resort to exchange transfusion, peritoneal or hemodialysis.
8. Serum iron level should be determined before treatment and every 6 hours un-

Continued on Page 324

WHAT ARE THE CRITERIA FOR THE DIAGNOSIS OF DIABETES MELLITUS

• In Delaware a year round campaign is under way to find individuals with previously unknown hyperglycemia which may indicate the presence of cardiovascular disease or diabetes or both, a matter of increasing importance. This article is an attempt to clarify some of the current confusion which apparently exists about the significance of various blood sugar levels and methods.

LEWIS B. FLINN, M.D.

In Delaware we are in the midst of an all year round diabetic detection program conducted by the Delaware Diabetes Association and the Delaware State Board of Health. Such a continuing survey has never been done previously. All the public has been invited but especially the high risk group, i.e., those having a family history of diabetes, mothers of large babies, adults over 40 and overweight and all persons with cardiovascular disease. In eleven different stations free blood sugars are determined by the Dextrostix method between 1 and 3 P.M. every Wednesday. In those testing 130 mgs % or higher venous blood is drawn immediately and if the venous sugar is found to be elevated, the individual's personal physician is informed for further follow-up and examination. In instances that are clear cut, definitely high or definitely low, there is no question as to proper procedure. What should be done about the borderline cases? What is a borderline case? What individuals should be followed and checked at regular intervals by their physicians?

The American Diabetes Association has established the following classification of diabetes:[15]

1. *Overt Diabetes Mellitus*

This is frank, symptomatic diabetes. Characteristic symptoms are usually present. There is hyperglycemia and glucosuria during the postprandial period, and fasting hyperglycemia is usually noted. A glucose tolerance is usually not required for diagnosis.

2. *Chemical or Latent Diabetes*

This is asymptomatic, mild diabetes. The fasting blood glucose level is usually normal; the postprandial blood glucose level may be elevated. The oral or intravenous glucose test is abnormal in the absence of stress.

3. *Suspect Diabetes Mellitus Including Stress Hyperglycemia*

Not all persons who have carbohydrate intolerance associated with stress have genetic diabetes mellitus, but stress may provoke latent or overt diabetes mellitus. Symptoms due to severe hyperglycemia which occur during stress should be regarded as overt diabetes until proven otherwise. Asymptomatic impairment of carbohydrate tolerance should be re-evaluated after total recovery from the stress.

The most common situations associated with impaired glucose tolerance are:

A. Pregnancy. The term "gestational diabetes" indicates the presence of impaired glucose tolerance during pregnancy which reverts to normal following delivery.

B. Infections, trauma, vascular accidents, impaired nutrition, and severe emotional disturbances.

Dr. Flinn is Honorary Physician, Department of Medicine, Wilmington Medical Center, Delaware.

C. Pharmacologic agents such as steriods and thiazides.

D. Endocrinopathies such as Acromegaly, Cushing's Syndrome, Thyrotoxicosis, Pheochromocytoma.

4. *Prediabetes*

This is a term applied to the period of time prior to the onset of identifiable diabetes mellitus (overt, chemical or latent). This is a conceptual term identifying the interval between conception and the demonstration of impaired glucose tolerance. It cannot be diagnosed with certainty at the current state of our knowledge except in the identical twin of a diabetic patient.

Class 1. Overt diabetes — needs treatment and diabetic management.

Class 3. Needs to be re-examined and followed after the period of stress has passed.

Class 4. Needs to be followed but not necessarily at frequent intervals.

Class 2. Presents the biggest problem in diabetic screening. What are the currently accepted criteria for so-called mild or chemical or latent diabetes? The answer is that there are no uniformily accepted criteria. There are many different opinions depending on the glucose load, the time the blood sugar is determined, the method used and whether on whole blood or plasma. Fajans[1] has suggested that a standard glucose tolerance test should be conducted after 3 days of diet containing 250 to 300 gms. of carbohydrates: 1.75 gms. of glucose per kilogram body weight is given in lemon flavored water. The ensuing critical blood sugar level by the Somogyi-Nelson method is 160 gms.% in 1 hour, 140 in 1½ hours, 120 in 2 hours. Above is considered diabetic and below this usually normal. A 2 hour reading between 110 and 120 is suspect. It should be pointed out that in early diabetes even a standard glucose tolerance test may fluctuate over a period of time. Similar findings to the above can be obtained with a standard 100 grams or 75 grams glucose load unless the individual is a large male when the larger 1.75 grams per kilogram body weight is more accurate. O'Sullivan and Williams[2] in the Sudbury, Massachusetts, study screening the entire adult population, except the previously known diabetics, found that those having postprandial blood sugars over 127 mgs% had 1 hour postglucose levels of 170 mgs% or over in 1.5%. When these were checked by a standard glucose tolerance test, only 0.8% were found elevated. When a standard glucose tolerance test was conducted alone without prior postprandial screening, the positives were 1.2%. The low findings are explained in part because of the criteria used — fast 110, 1 hour 170, 2 hours 120, 3 hours 110. Others, such as Butterfield and Hayner,[3,4] have found the 1 hour postglucose sugar to indicate prevalence of diabetes in some studies as high as 12 to 14%. Butterfield feels that venous sugars should be abandoned since arterial blood is more indicative of the true glucose level in the body. He uses capillary blood and his values run about 6 to 10% higher than venous blood. He also feels that venous samples are inaccurate and not reproducible as compared to capillary or arterial samples.

Variation in Blood Sugars

Numerous authors including Beaser[5] have emphasized the variation in blood sugars according to different laboratory procedures. Most of the more accurate reports in the literature have used true glucose values determined usually by the Somogyi-Nelson method. Unfortunately in Delaware over the years the Folin Wu method had been used in most laboratories. This is known to be less accurate and to run perhaps 10 to 20 mgs higher than the Somogyi-Nelson method. Recently the autoanalyzer has come into more wide spread use. The autoanalyzer gives values approaching the Somogyi-Nelson method when using whole blood. The trend now is to use plasma in the autoanalyzer which Knowles[6] among others had recommended as probably more desirable. It gives a more accurate reflection of the glucose level in intercellular fluid and is also more practical to use in the autoanalyzer. It is used in several laboratories in Delaware. However, it is not generally realized by most physicians at the present time that the value of glucose by the autoanalyzer on plasma runs about 14% higher than when whole blood is used.

TABLE 1

	True Glucose Smogyi-Nelson	Whole Blood Auto-Analyzer	Whole Blood Folin Wu	Plasma Auto-Analyzer
Post Prandial 1-2 hrs. approx.	130	130	140	150
Post Glucose 1 hour	160	160	170	180
Post Glucose 2 hours	120	120	130	140

Variation of critical blood sugar level by different laboratory methods. Add 6-10% per decade after age 40.

Again it has been found by Andres and Hayner [8,4] and others that the level of blood sugar increases with age. The criteria for standard glucose tolerance tests previously mentioned is for the age group 20 to 39 years. The critical level rises 6 to 10% per decade thereafter. A 1 hour post-glucose sugar of 200 at age 80 or a 2 hour value of 150 are probably normal or at least can probably not be called diabetic. Such hyperglycemia with advancing age is important to ascertain because of the increasing association of cardiovascular disease with hyperglycemia. This was pointed out very clearly by Ostrander and associates at Ann Arbor in 1965[8] and again in 1967[9].

The importance of the blood sugar and diet in atherosclerotic disease is further emphasized by the recent studies of Kuo[10,11]. He found that 67.8 of atherosclerotic patients referred for blood lipid studies gave a family history of diabetes and all 28 patients with severe hyperglyceridemia were found to have abnormal glucose tolerance.

Kaufman[13] has also indicated changes in serum lipid levels according to the type of carbohydrate ingested. Even Hamman and Hirschman[14] when they first established the standard glucose tolerance test in 1917 pointed out that hyperglycemia and a high renal threshold often occurred in nephritis, hyperthyroidism, dyspituitarism, and in certain stress states such as pneumonia and after adrenalin administration.

In summary then it is most important to detect diabetes as early as possible before symptoms develop. By so doing serious complications may be avoided by proper diet, reduction in weight, etc. and early manisfestations of cardiovascular disease may be observed. In this all year round detection campaign in Delaware, it is impractical to do standard glucose tolerance tests on all persons tested. Cortisone glucose tolerance testing likewise is not indicated. It is also impractical to do arterial or venous sugars on all. It *is* practical to do Dextrostix finger tests which are screened at 130 mg% at which level venous blood is immediately drawn. A large number of these venous sugars are determined from plasma by antoanalyzer. Some may be determined by the Folin Wu method, some by Somogyi-Nelson and perhaps some by autoanalyzer using whole blood. All venous sugars will be reported to the physician designated by the person tested and the blood sugar method used will be stated with normal values for that particular laboratory. Comparable values for the various methods are indicated in Table I. A postprandial venous sugar of 130 mg% or above (true glucose) should be considered diabetes until proved otherwise. The first procedure should be to repeat the test after a high carbohydrate meal and/or do a standard glucose tolerance test. The critical levels for the latter are 1 hour 160, 2 hours 120 (true glucose). Similar levels will be found by the autoanalyzer using whole blood. If plasma is used, the autoanalyzer critical level will be approximately 180 at 1 hour, 140 at 2 hours. The Folin Wu method gives results usually somewhere in between. For postprandial sugars the critical level is about 130 mg% for Somogyi-Nelson and whole blood by autoanalyzer, 140 Folin Wu and 150 on plasma by autoanalyzer. Most of these individuals will have normal fasting sugars. It is hoped that each physician will consider each report above the critical level as a least suspicious of diabetes and therefore follow such individuals carefully and regularly. In the past too frequently physicians have taken fasting blood, found it normal and then indicated to the patient that there was nothing wrong. Such a course is to be deplored!

Conversely, the erroneous diagnosis of diabetes by too sudden an assumption that the individual has diabetes, or by misinterpreting a high plasma blood sugar by the autoanalyzer, may cause unnecessary alarm and worry to the patient.

REFERENCES

1. Fajans, S. S.: Current Status of Glucose Tolerance Tests, 27th Annual Meeting, American Diabetes Association 1967.
2. O'Sullivan, J. B. and Williams, R. F.: A Population Study in Sudbury, Mass., J.A.M.A. 198:579-582.
3 Whichelow, M. J., et al: Critical Analysis of Blood Sugar Measurements in Diabetes Detection and Diagnosis, Diabetes 16: 219, 1967.
4. Hayner, N. S., et al: Community, Tecumseh, Michigan, Diabetes 14: 413-43, 1965.
5. Beaser, S. B.: Diagnosis of Early Diabetes Mellitus, J.A.M.A. 199: 835-836, 1967.
6. Zalme, E. and Knowles, H. C.: A Plea for Plasma Sugar, Diabetes 14: 165-166, 1965. ....
7. O'Sullivan, J. B. and Kentor, N.: Variability of Blood Sugar Levels with an Automated Method, Public Health Report 78: 1023-1029, 1963.
8. Langs, H. M., Andres, R., Pozefsky, T. and Gregerman, R. I.: Responses in Serum Insulin Concentration to the Cortisone Glucose Test: The Importance of Age, Diabetes 15: 539, 1966.
9. Ostrander, L. D., Francis, T. Jr., Hayner, N. S., Kjelsberg, M. O. and Epstein, F. H.: The Relationship of Cardiovascular Disease to Hyperglycemia, Ann. Int. Med. 62:1188-1198, 1965.
10. Ostrander, L. D.. Jr., Neff, B. J., Block, W. D., Francis, T., Jr. and Epstein, F. H.: Hyperglycemia and Hypertriglyceridemia Among Persons with Coronary Heart Disease, Ann. Int. Med. 67: 34-41, 1967.
11. Kuo, P.T.: Dietary Sugar in the Production of Hyperglyceridemia in Patients with Hyperlipemia and Atherosclerosis, Trans Assoc. Amer. Physicians 78: 97-116, 1965.
12. Kuo, P. T.: Hyperglyceridemia in Coronary Artery Disease and Its Management. J.A.M.A. 201: 87-94, 1967.
13. Kaufman, N. A., Poznanski, R., Blondheim, S. H. and Stein,
15. Classification of Genetic Diabetes Mellitus: Diabetes: 16:540, 1967.

ACUTE IRON INTOXICATION

Continued from Page 320

til below 200 mgm. Follow BUN, blood sugar, electrolytes, SGPT, also prothrombin time in 24 hours.

9. Upper G.I. series in 3 to 6 weeks (pyloric stenosis).

Since prevention is far better than any treatment, parents given iron in any form should be warned of the potential danger and advised to keep all such medications behind locked doors, realizing full well that attempts at keeping anything "out of reach" of exploring children falls into the realm of impossibility.

Summary

A case of an 18 month old child with acute iron intoxication treated with exchange transmusion and Deferoxamine (Desferal - Ciba), a new, potent, highly specific chelating agent is presented. The patient is now asymptomatic following complete recovery. A rational method of treatment for acute iron poisoning in children is proposed, based upon a review of the literature and our experiences with this new agent.

ACKNOWLEDGEMENTS

We would like to express our appreciation to Dr. Warren R. Johnson for his invaluable guidance in managing this case; to Dr. David D. Miles for his surgical skill; and to Mr. E. G. Scott for his aid in preparing this manuscript.

REFERENCES

1. Amerman, E. E.; Brescia, M. A.; Attahi, F.: Ferrous sulfate poisoning, report of a case successfully treated by exchange transfusion: J. of Ped., 53:476, 1958.
2. Covey, T. J.: Ferrous sulfate poisoning: J. of Ped., 64:218, 1964.
3. Forbes, G.: Poisoning with a preparation of iron, copper and manganese: Brit. Med. Jour., 1:367. 1947.
4. Whitten, C. F.; Gibson, G. W.; Good, M. H.; Goodwin, J. F.; Brough, A. J.: Desferrioxamine in the treatment of acute iron poisoning: Pediatrics, 36:322, 1965.
5. McEnery, J. T.; Greengold, J.: Treatment of acute iron ingestion with deferoxamine in 20 children: J. of Ped., 68:773, 1966.
6. Greenberg, M.; Rosen, B.; Keating, J.; Connelly, J.: Iron toxicity treated with deferoxamine: Clin. Ped., 5:485, 1966.
7. Jacobziner J.; Raybin, H. W.: Accidental chemical poisonings — iron intoxication: N.Y.J. of Med., 62:85, 1962.
8. Cann, H. M.; Verhulst, H. M.: Accidental poisoning in young children; the hazards of iron medication: A.M.A. Jour. of Dis. of Child., 99:688, 1960.
9. Henderson, F.; Vietti, R. J.; Brown, E. B.: Desferrioxamine in the treatment of acute toxic reaction to ferrous gluconate: J.A.M.A., 186:1139, 1963.
10. Reissmann, K. R.; Coleman, R. J.; Budae, B. S.; Moriarty, L. R.; Acute intestinal iron intoxication: Iron absorption, serum iron and autopsy findings: :Blood 10:35, 1955.
11. Report of the 19th Ross Pediatric Research Conference: p.53, 1956.
12. Jacobs, J.; Green, J.; Gendel, B.: Acute iron intoxication: N.E.J.M., 273:1124, 1965.
13. Pisciotta, A.; Santos, A.: The treatment of acute iron intoxication with Desferrioxamine: A.M.A. Jour. Dis. of Child., 107:424, 1964.
14. Moeschlin, S.; Schnider, U.: Treatment of primary and secondary hemochromatisis and acute iron poisoning with a new, potent chelating agent (Desferrioxamine-B): N.E.J.M. 269:57, 1963.
15. Ross, F.G.M.: Pyloric stenosis and fibrous stricture of the stomach due to ferrous sulfate poisoning: Brit. Med. Jour., 2:1200, 1953.
16. Wilmers, M. J.; Heriot, A. J.: Pyloric stenosis complicating acute poisoning by ferrous sulfate: Lancet, 2:68, 1954.
17. Smith, R.P.; Jones, W.; Cochran, W. E.: Ferrous sulfate toxicity; Report of a fatal case: N.E.J.M., 243:641, 1950
18. Brown, R. J. K.; Gray, J. D.: The mechanism of acute ferrous sulfate poisoning: Canad. M.A.J., 63:192, 1955.

Letters to the Editor

To the Editor:

I would like to call to the attention of the medical community of the State of Delaware, the passage of two recent Acts by the United States Congress. These Acts are officially listed as Public Law 89-563, Motor Vehicle Safety Standards, and Public Law 89-564, Highway Safety. Under the provisions of the Highway Safety Act of 1966, the Secretary of Commerce was instructed to develop a program of highway safety standards. These highway safety standards were developed and were approved by the Secretary of Commerce and the Secretary of Transportation in June of 1967. The standards consist of thirteen parts. Some of these include such subjects as motor vehicle inspection, registration, driver education, traffic courts, alcohol, and others. The most important aspect of this to the medical community is perhaps *Standard 4.4.11*, Emergency Medical Services. Quoted below in its entirety for your information is the Emergency Medical Service Standard.

At a recent meeting of the American Medical Association's Conference on Emergency Medical Services, the implication was made very strong that these highway safety standards would have more impact on the practice of medicine than Medicare.

For this reason I present to you the approved Standard for your information.

U. S. Department of Commerce
National Highway Safety Agency
Highway Safety Program Standard, No. 4.4.11
EMERGENCY MEDICAL SERVICES

Introduction

Many of those injured in highway accidents die needlessly or are permanently disabled because they do not receive prompt and proper emergency medical care. Few areas of the United States now have adequate emergency services. In most areas, there has been no satisfactory advance planning of emergency logistics, communication, and transportation facilities. Present services are not always properly managed. Ambulance operators and attendants are commonly not required to be expert in first aid, nor are they required in most parts of the country to carry adequate equipment in their vehicles. The presence of nurses or physicians in ambulances is rare. Hospitals and ambulances seldom have radio links either to each other or to police radio systems. Helicopters are seldom employed, and landing pads are present at only a small number of hospitals, chiefly along our coasts for the use of the Coast Guard. It is imperative that emergency services be improved throughout the Nation.

Background

The Highway Safety Act reflects the importance of emergency services by requiring that the highway safety program standards include coverage of emergency services.

> When accidents occur it is essential that every available resource be mobilized to save lives, lessen the severity of injuries, protect property, restore movement of traffic. An essential part of the State safety program should be the development of an emergency facilities system. This will require the advice and services of experts and personnel in medicine, law, engineering, communication and law enforcement, at a minimum.

Report No. 1700, House of Representatives 89th Congress, 2d Session, July 15, 1966, p. 19

Purpose

To provide an emergency care system that will:

1. Provide quick identification and response to accidents,
2. Sustain and prolong life through proper first aid measures, both at the scene and in transit,
3. Reduce the likelihood of permanent disability and prolonged hospitalization,
4. Provide the transportation necessary to bring the injured and definitive medical care together in the shortest practicable time.

Standard

1. The State shall give its State health agency the responsibility and authority necessary to ensure that persons injured in highway accidents in any and all of its jurisdictions receive prompt emergency medical care of a quality equal to the best that can be provided by modern medicine under the range of emergency conditions encountered.
2. To accomplish this objective the State shall provide the health agency with the authority and responsibility to:
    a. Provide for the periodic comprehensive surveillance of all emergency medical services in the State;

b. Collect analyze, and publish annually information indicative of the coverage and effectiveness of emergency medical services in all cities and counties in the State, giving special reference to services in rural areas. These data shall include quantitative data on the time intervals between accident occurence and arrival of the injured at the facilities to which they are taken;

c. Establish and enfore training, licensing, and related requirements for ambulance opperators, attendants (including drivers), and dispatchers;

d. Establish and enforce requirements for the types and numbers of emergency vehicles to be provided by operators and for their supplies and equipment;

e. Establish and enforce requirements for the operation and coordination of ambulances and other emergency medical care systems. This shall include a requirement that, whenever feasible, ambulances carry two-way radios capable of operating in coordination with police departments and hospitals;

f. Ensure the provision of first aid training programs and refresher courses for emergency services personnel, for policemen and firemen as needed, and encourage first aid instruction for the general public;

g. Require, whenever practical, the installation and use, in specified types of hospitals, of two-way radios capable of operating in coordination with police departments and ambulances;

h. Appoint a full-time Medical Emergency Services Coordinator to have primary responsibility for the requirements of this Standard;

i. Prepare a Comprehensive Plan for Emergency Medical Services throughout the State.

3. The Comprehensive Plan for Emergency Medical Services shall include the following:

   a. The locations, call letters, and telephone numbers of hospitals with:
      1a. Advanced First Aid Facilities*
      2a. Limited Emergency Facilities* and
      3a. Major Emergency Facilities*

   c. Areas of responsibility for each emergency sub-system including a standard time for each to respond, and major physical barriers to movement of each;

   d. A system of coordinating emergency medical records and accident reports which should be complimentary;

   e. Possible deficiencies in emergency care because of weather, traffic, remote location, or lack of facilities and equipment;

   f. Agreements between contiguous States, counties or communities for mutual support in emergency medical care;

   g. Relevant ordinance and licensing requirements, including those established in accord with 2. c, d, and e, above.

   h. A standard system for characterizing need for emergency medical care as to degree of urgency, magnitude and nature of accident to set up priorities in dispatching and communication procedures;

   i. Recommendations for the most suitable locations for heliports at: Advanced First Aid Facilities; Limited Emergency Facilities; and Major Emergency Facilities, Statewide;

   j. Provision for review and updating of the master plan as needed.

WILLIAM H. DUNCAN, M. D.

---

*As defined in: Accidental Death and Disability: The Neglected Disease of Modern Society; National Academy of Sciences — National Research Council, Washington, D. C., September, 1966, pp. 21-22.

To the Editor:

My recent experience in submitting an article to *Medical Economics* may be of interest to our fellow physicians. I was inspired to write the article after seeing a report in *Medical World News* by Dr. Hughes, past president of the American Academy of Pediatrics. He suggested that an internist-pediatric team for the care and handling of medical problems would answer most of the needs for such medical care as outlined by the Millis Report.

Since I had had experience in such a team in my own office for the past 15 years, and had also questioned the concept of Millis' "primary physician," I wrote the article as I would one being submitted to most medical journals. *Medical Economics* answered that they were interested in my idea, but I would have to re-submit it using their style, which

I soon found was anecdotal and narrative in type. This switch in style was a challenge that, with the help of my wife, I apparently succeeded in accomplishing, so that the final product was accepted with relatively few, but some, editorial changes.

My associates were amazed to see that the final product looked as if it were designed for *Woman's Day* magazine. A review of *Medical Economics* articles confirmed the fact that the style (which none of us had paid much attention to) was of this type, suggesting that the high readability among physicians is based upon popular magazine techniques, and suggesting that we as physicians are not nearly as sophisticated a group as we sometimes think. Drs. Hearne, Meckelnburg, and I were asked to cooperate by letting a photographer photograph our office and some of our patients, including some families covering several generations. It was not until then that we realized how few of our Medicare patients had grandchildren under 10. The photographer and staff proved to be cooperative and easy to work with. He came from New York where he did free-lance photography.

My chief disappointment in the article was the implication in the title, added by the editor, that we were trying to replace the general practitioner. Instead, I was criticizing the "primary physician" concept of Millis. I had hoped to say that it seemed more logical for physicians interested in community or family practice in most areas of the country to spend any residency time he could afford in a specialty, such as internal medicine or pediatrics. If a family could have one office, rather than one man, to care for most medical problems, such an arrangement with an internist and pediatrician, for example, promises more specialized knowledge than one man could expect to offer. In even a small group it becomes easier for each physician to stay with one major field of interest instead of three or four. I suspect that the "primary physician," even if trained in internal medicine, pediatrics, obstetrics, and psychiatry, at the end of a residency would have a hard time keeping up to date in all fields equally after 10 years of practice.

I'm afraid that the popular approach, plus an inappropriate title, may have missed the point I was trying to make. Nonetheless, writing such an article has been an interesting experience.

Robert W. Frelick, M.D.

To the Editor:

In the May, 1967, issue of their *Statistical Bulletin*, The Metropolitan Life Insurance Company commented on infant mortality in the United States and abroad. The mortality rate of infants in the first year of life in 1966 was 23.4 deaths per thousand live births — an all-time low. Critical appraisal of the data in comparison with other countries, however, indicates that there is much more room for improvement. The decade of 1953-1954 to 1963-1964 showed a decline of 8 percent compared to a drop in infant mortality of 27 percent in the previous decade. Some areas of the country showed greater decline than others with some states actually showing an increase. The states of Arizona and New Mexico, where there is an active U. S. Public Health Program among the Indian population, showed the greatest decrease.

In the state of Delaware for the year 1953-1954, the nonwhite and white rates were 51.6 and 23.7 percent respectively with a decline in 1963-1964 to 40.3 and 18.7 percent for nonwhites and whites respectively; the over-all rate drop was from 28.7 in 1953-1954 to 23.1 percent in 1963-1964. The data points out disparities in the infant death rate. There was a greater reduction in mortality of white infants compared to nonwhites, in fact, the 11 percent reduction in mortality of white infants was twice that of nonwhites. (With one exception, where increase in mortality rate occurred, it was due to a sizable increase of the nonwhite death rate and where a decrease in the nonwhite race was occurring, it was in those states where the nonwhite population was predominantly Indian.)

Some interesting figures are obtained when one compares the United States with other countries of the world. Fourteen countries

Continued on Page 331

HEALTH FACILITIES PLANNING COUNCIL

The President's Report

During the past year, the Health Facilities Planning Council, Inc., became a reality. On October 4, 1966, the organization was incorporated as a non-profit agency designed to coordinate and improve all health facilities and to develop plans to serve the need of the people of the State of Delaware.

Final organization of the Council was completed on March 1, 1967, when Clifford T. Foster became its first Executive Director. His report follows:

The Executive Director's Report

It is a pleasure to report that the Council has established itself in a few short months as an effective agency in the State of Delaware. Our endorsement has already been sought with respect to the modernization and construction plans of three hospitals. We have established direct contact with all health-related groups in the State and the welcome accorded us has been gratifying. All are cooperating with us and many are using the Council for guidance and counsel.

One of our first desires was to have at our disposal factual information so organized as to support the overall concept of good planning. Among other things, we have initiated a monthly report based on information furnished to us by each hospital in the State as to the utilization of its facilities. The report gives the month's percentage of occupancy, length of stay, admission per bed, out-patient visits, and statistics as to Medical-Surgical cases, Obstetrics, Pediatrics and Newborns. Knowing how important it is to the hospital in projecting the needs for patients over 65 due to Medicare and Medicaid, a complete statistical breakdown is given for all patients over that age. State mental and T.B. hospitals are included under the category of long-term hospitals. The information contained in this report has been greatly appreciated by hospital administrators and others within the hospital complex.

OFFICERS
BOARD OF DIRECTORS

Austin T. Gardner	President
R. Russell Pippin	Vice-President
Benjamin P. Frye	Treasurer-Secretary

C. Lalor Burdick
I. G. Burton
Henry M. Canby
Norman L. Cannon, MD
Gene Derrickson
Lewis B. Flinn, MD
Robert B. Flint
J. Allen Frear
Charles J. Harrington
Harry W. Lynch
Harold V. Maybee
Lemuel C. McGee, MD
C. L. Reese, Jr.
Robert L. Richards
Collins J. Seitz
Otis H. Smith
Eldridge J. Waters

We have been engaged in State legislative matters that concern health. In conjunction with the Association of Delaware Hospitals and the Medical Society, we have prepared a Hospital Licensure Bill that has been presented to the State Legislature and has passed the Senate. We have every belief that this Bill will be passed by the House when it convenes later in 1967. The Bill is so written that the Executive Director of the Council will be a member by law of an advisory committee that will assist the State Board of Health to administer the law.

The Council has been asked to take an active part in establishing a career program for health personnel within the State school system. In conjunction with the Association of Delaware Hospitals and the Community Services Council, we are endeavoring to set up curricula within the framework of the counselors in our public school system. This is a long-range plan and we feel we must indoctrinate the student at the eighth or ninth grade level in order to direct him toward a career in health.

Another project we are engaged in with other organizations is a statewide organized Home Care Program. This program is working rather well in New Castle County, out of the Wilmington Medical Center. Through the facilities of the Community Services

Council, the Association of Delaware Hospitals and the Health Facilities Planning Council, the program is starting to take root in the lower two counties. We are hopeful that this program will be able to reach all the areas of the State within the year. Conservatively speaking, if this program could be in full swing within the end of the year, we should be able to free 250 acute care beds within the State. Dr. William Duncan, Director of Ambulatory Services in the Wilmington Medical Center, is also working with the Council and the Association in this very important program.

Public Law 89-239, or the Regional Medical Program, has been progressing quite rapidly in the Greater Delaware Valley Region, of which Delaware is a part. This program is also known as the Heart, Cancer & Stroke and Related Diseases Program. The Council became involved when on March 8th, shortly after our formation, at a meeting in the Academy of Medicine, I was called upon to speak about the role the Health Facilities Planning Council would take in this important program. From that day on we have been actively engaged as the liaison for this program for Delaware. Plans have been progressing rather rapidly in the last two or three months and a Planning Committee has been formed by the Council, whose job it will be to form a Sub-Advisory Committee, which in turn will implement the Regional Medical Program for the State of Delaware. The Council has been working with the Sussex County Medical Society in having them realize that their place is with the State of Delaware, as it pertains to this program. Several meetings have been held, involving the Council's Director and the Chairman of our Technical Advisory Committee, with Dr. Spring, the Coordinator of the Heart, Cancer & Stroke Program. This is another step in the over-all comprehensiveness of health care for the citizens of our State.

One of the important pieces of legislation passed by the 89th Congress was Public Law 89-749, or the "Partners in Health Program." This is known as the Comprehensive Health Program for the entire country, and the State Board of Health, under Dr. Hudson, has been designated as the single State agency to implement this program. We have been working closely with the State Board of Health in attending many meetings, both in Dover and New York, to enable our State to participate in this over-all program. This program takes in not only facilities, but manpower, environmental health, housing, air pollution, water pollution, etcetera. The State Board of Health has stated that it would like the Health Facilities Planning Council to play a major role in the implementing of Public Law 89-749.

Both the Federal Housing Authority and the State Board of Health seek the Council's comments as to the need for a new nursing home prior to the State's issuing a Certificate of Need and the F.H.A.'s final approval of the loan.

We are encouraging the immediate formation of strong, adequately-staffed planning committee in every facility. All hospitals formed planning committees and are actually engaged in following good planning concepts.

We are still gathering basic data for the hospitals within our area, and being a long, tedious job, it will take many months to complete. Most of the hospitals are endeavoring to gather this information for us, but in the end I am sure it will take a site visit to each hospital to complete the report. The report covers every item within the hospital structure. The hospitals feel that this will be an inventory source tool for their own use. As hospitals change in the future, this basic report will be changed.

My assistant has been conducting an indepth study of all nursing home, extended care, and long-term care facilities within the State. This is the first time a study of this nature has ever been attempted in Delaware. Upon completion of this survey, we will have the information available to enable us to project the bed need and the location of nursing homes for the planning period to 1980.

On April 3rd of this year we published our first periodical entitled "Pitfalls of Excessive

Debt Financing for Hospital or Related Health Facility." We felt that since more health facilities were finding it extremely difficult to raise money in fund drives and since most of them would be turning to lending institutions and the use of long-term debt as one of the means of financing their construction projects, we should provide as a guide a factual statement of the expense per patient day of carrying various amounts of debt. The Council felt that this would be most useful to hospital trustees, sponsors of hospitals and nursing homes, and to the financial institutions which lend the money to the facilities. This periodical was accepted by the banking institutions and all other facilities as a most welcome tool.

Booklet Published

In July of this year we published our "Guidelines and Criteria for Planning Hospital and Related Health Services in Delaware." This booklet has been distributed widely throughout the State. In the pamphlet we established goals for the long-range planning of our health facilities, set forth guides for evaluating hospital construction proposals by examining the need for the construction, the size of the facility and the range of services to be offered, the requirement for specialized services, the staffing patterns, the financial aspects, the flexibility of the proposal, and the construction standards. The pamphlet also gave guidelines for evaluation of specific services and/or programs — that is, modernization programs, obstetrical facilities, etc. Also included are guidelines for evaluating extended care and nursing home facilities.

Our third publication was distributed on September 12, 1967, under the heading "Historical Utilization Review." With the cooperation of the hospitals in the State, we were able to assemble all of the facts concerning the utilization of facilities from the year 1962 through 1966. In this review, which is being used by all of the facilities as a management tool, we showed the patient days rendered compared by hospital, by county and state, and computed the average annual per cent of increase or decrease. This report will be updated annually and distributed to all interested persons.

We are at the present time compiling an Obstetrical Report and although not ready for press, it shows that for the next ten to fifteen years there will be no need for additional obstetrical beds in the State should the birth rate per thousand remain stable.

The Greater Wilmington Development Council, through a committee to investigate the health needs of their neighborhood ventures, has asked me to serve as Vice Chairman of the committee. We have been meeting with the committee members and other members of the G.W.D.C., endeavoring to establish goals for a medical center to be placed somewhere in the deprived area of the City. The New Castle County Medical Society will also be drawn into the planning process as we progress. The realization that the Federal Government is endeavoring to place health care at the doorstep of many of our deprived citizens has been the propelling force behind this committee's work. We expect within the next few months to have sent a request for a project grant to the Public Health Service.

In closing this, our first fiscal year, and analyzing the Council's activities, it is a pleasure to report that health facilities in the State are intent upon doing an excellent job of planning and have cooperated with the Council staff in achieving programs that are in the best interests of patient care for all Delawareans.

MODERIZATION AND CONSTRUCTION PLANS REVIEWED

Expansion and Modernization Projects Endorsed:	
Milford Memorial Hospital	$1,850,000
Beebe Hospital	$1,200,000
New Construction Endorsed With Limitations:	
Riverside Hospital	$2,500,000

Board recommended that the Board of Directors of Riverside Hospital consider sounder means of financing.

FINANCIAL REPORT

Statement of Income and Expenditures
and Fund Balance
For the year ended September 30, 1967

GENERAL FUND

Income		
Contributions	$125,700	
P.H.S. Grant — Delaware	9,792	
Interest Earned — Gov't Bonds	3,327	
Total Income		$138,819
Expenditures		
Salaries & Benefits	$ 18,676	
Consultant Fees & Expenses	3,712	
Insurance	347	
Rent & Office Expenses	2,229	
Travel Expenses	1,735	
Telephone & Telegraph	294	
Organization Expense	47	
Depreciation	227	
Dues & Subscriptions	242	
Miscellaneous	313	
Total Expenditures		$ 27,822
Excess Income over Expenses		$110,997
Fund Balance — September 30, 1967		$110,997

PROFESSIONAL COMMITTEES

Technical Advisory Committee

Ernest Shortliffe, M.D., Chairman
Administrative Vice President
Wilmington Medical Center
Maurice Abraham
Executive Director
Kent General Hospital
Joseph B. Ahlscier
Administrator
Milford Memorial Hospital
W. C. Anderson
Administrator
Emily P. Bissell Hospital
Henry Cooper
Administrator
Riverside Osteopathic Hospital
Gordon Crispin
Administrator
Nanticoke Memorial Hospital
Frank Larsen
Administrator
Beebe Hospital
Mae D. Hightower
Executive Director
Delaware Curative Workshop, Inc.
Sister Mary St. Robert
Administrator
St. Francis Hospital

PROFESSIONAL COMMITTEES

Medical Advisory Committee

H. Thomas McGuire, M.D., Chairman
President
Medical Society of Delaware

Norman L. Cannon, M.D.
Senior Attending Physician — Urology
President, Medical-Dental Staff
Wilmington Medical Center

Lewis B. Flinn, M.D.
Trustee
Smyrna Hospital for the Chronically Disabled
Director, Delaware Academy of Medicine

Henry George, D.O.
Chief of Staff
Riverside Osteopathic Hospital

G. Barrett Heckler, M.D.
Member of Education Committee
Medical Society of Delaware

Walter W. Moore, M.D.
Member of Medicare Adjudication Committee
Medical Society of Delaware

LETTERS TO THE EDITOR

Continued from Page 327

reported lower mortality rates than the United States during 1963-1964. Seven of these fourteen countries had higher rates in the previous decade and reported substantially greater declines than this country during the year 1963-1964. In 1963-1964, the low was 14.8 per one thousand live births in Sweden and this was in striking comparison with the high of 37.8 per one thousand live births in Italy. Naturally, the rates cited for different countries indicate broad trends only and true comparisons would require more specific information of local circumstances than is currently available. It is of note, however, that foreign countries having the lowest mortality rate have in many instances launched specific programs to reduce infant mortality.

In this country maternal and child health programs have been introduced at the local community level and the actions of these programs are directed at the high mortality risk groups which are in most need of medical-social help. It is hoped that this approach will bear results with improvement in this country's infant mortality rate.

Herman Rosenblum, M.D.

Editorials

Is there nothing new under the sun? This editorial was published in Volume 3 of the Delaware State Medical Journal by Dr. Albert Robin when he assumed the editorship in December, 1911.

"THE VALUE OF A STATE MEDICAL JOURNAL

The question may arise in the minds of our members as to the raison d'etre of a State Medical Journal. Surely, there are enough medical journals to satisfy the needs of the most exacting, and quite a few journals which are so superior to anything that we may publish that the very attempt to equal them, much less to replace them, would be like the performance of the bull-frog who tried his best to inflate himself to the size of the ox. However, no matter how splendid these journals are, they do not serve the local interests. Much as the interests of all doctors are in common, there are special local interests which affect the doctors of a given locality. The conditions under which we practice in this State are different from those prevailing in another State; our medical laws are different; our medical problems are different; and even our doctors are just a bit different from those of other States. These local interests require special expression which can find place only in a local publication.

While this journal is published by the State Medical Society, it shall exist for the benefit of all the doctors in the State, and will depend for its success on good will and co-operation of every member of our profession. We solicit brief articles on medical subjects, personal items, and free expression of opinion on any subject of interest to our doctors. It is only by such help and co-operation that we will be able to make a real live Journal which will be welcome to the doctor's office and of which we will all feel proud."

AS WE WERE

Recently, the Journal acquired a treasure. An antique shop in Smyrna found in its possession a stack of Delaware State Medical Journals, circa 1911-1917.

Some of the contents are so timely they would seem current if reprinted today without any revision whatsoever. Some are distinctly old fashioned: the Hupmobile was new and doctors were urged to try an automobile as the best means of transportation. The Journal editor exhorted his readers to buy as large and solid an automobile as he possibly could; it would be good for his professional image!

Elsewhere in this issue are a few excerpts from one of these antique Journals. If you would like to see more, tell us.

A CASE OF BENIGN OBESITY

Last month's issue (October) was a special in many ways. Among its unusual attributes was that of obesity. It was fat with thirteen original papers, all but one by physicians presently in practice in Delaware. The editor would like to encourage more of such excellant home-grown fruit. What's worth reporting? The rare, the atypical, the new; the new approach, the extended observation, the experiment that worked or failed; the bizarre, the unexpected; the caution, the encouragement.

Let us learn from each other's experiences. Doctors, man your pens.

TO THE EDITOR: DEAR SIR . . .

Agreeing or agreeable, disagreeing or disagreeable, we welcome your comments on our contents or on matters you feel would be of interest to your brethren physicians. Let us hear from you.

President's Page

THOUGHTS ON HEALTH CAREERS

The opportune statement recently made by C. T. Foster while speaking to the Delaware Academy of General Practice during their regular monthly meeting on November 7th, as to the program being implemented and fostered by several active civic groups in the City of Wilmington toward the eventual implemented of a Health Career Program has motivated this, my first editorial.

All persons, whether lay or professional, who have anything to do with health care in the State of Delaware, should be vitally interested in this project and must offer their support in any way possible to help the program. If continued high quality medical care is to be given our patients, there must be an ample supply of help of all types. We are experiencing shortages in all areas of health care in our State, as well as throughout the country, and a program that will help alleviate this shortage is worthwhile and worthy of our consideration and full support.

One of the major objectives of the committee regarding the Health Careers Program is their firm belief that if all groups in Delaware working in the field of health and medical care could exchange ideas and work together, much could be accomplished to improve existing health facilities and services by having an adequate manpower pool. Another major objective of the committee is the coordination of official and voluntary groups in Delaware which have mutual interests in health and medical care. It will also serve as a clearinghouse on health and medical care problems and programs, and will assist in eliminating duplication of work and overlapping of programs within the State. It is quite apropos that this committee should start implementing the program immediately, with the Medical Society's full support.

Just recently a Committee on Education for Health Manpower under the direction of the Conference of Health Executives of the Community Services Council submitted a report that gives quite specifically the health manpower inventory throughout the State. This study encompassed 107 occupations that relate to the health field and it was amazing to find that so great a shortage existed in many of the categories that are urgently needed in order to keep all health facilities running in a well-organized manner.

The explosive demands for health care means trained health care workers are needed immediately — and in the future — to staff hospitals, nursing homes, doctors' offices, and other health care facilities. Health care requires human hands and skills. Skills can be achieved only with proper training. And in health care training is best accomplished when actual on-the-job practice is combined with classroom time for learning.

The Health Careers Program anticipates the full cooperation of all the professional fields in the State and the cooperation of all of the counseling services that are now given to all schools.

The advance of our nation's health in this century has, in the final measure, been possible because of the unique quality and fortun-

Deaths

Lawrence J. Jones, M.D.

Doctor Jones, born in Maryland in 1891, died in Wilmington October 8, 1967. After receiving his medical degree from the University of Pennsylvania in 1916, he interned at the New York Post-Graduate Hospital and was House Surgeon at St. Luke's Hospital in New York. Then, after serving as a First Lieutenant in the U.S. Army in World War I, he set up practice in Wilmington in 1920.

Doctor Jones was past president of the New Castle County Medical Society, Delaware State Medical Society and the Staff of the Delaware Hospital and was a former member of the State Board of Medical Examiners. Between 1955 and 1961, he was Governor for the American College of Surgeons and was a member of the Executive Committee. He was Director of Surgery at St. Francis Hospital until 1965.

Doctor Jones was the son of a physician, Doctor John J. Jones who had the unusual distinction of having an article published in "Surgery" thirty years after his death. The article concerned the successful removal of the shaft of the femur followed by complete regeneration of the femur in a child. The patient died by drowning forty-nine years after the operation in 1889 and the success of the operation was proven at autopsy.

Doctor Jones is survived by his widow, two sons and three grandchildren.

---

ate quantity of men and women serving in our health professions. Delawareans respect and are grateful for our physicians, dentists, nurses, and others who serve our State's health problems. But it is clear that the future requires our support now to increase the quantity and assure the continuing high quality of such vital personnel.

To sum up the whole problem facing this committee, they hope to offer young people an ever-increasing number of careers that are exciting and personally rewarding. Continual progress in hospital services, medicine and technology means new careers for many persons with many different skills. In addition to doctors and nurses who work in our hospitals, the hospitals offer more than 200 different job classifications. Today's hospital is a center for community health. It offers careers that are rich in rewarding experiences and growing and future opportunities.

Daniel J. Preston

THE DIABETIC-CLINIC PATIENT

An Evaluation

Marvin H. Dorph, M.D.

Recently two senior University of Delaware nursing students interviewed forty-two diabetic patients who visited the Metabolic Clinic, Delaware Division, on three successive Fridays. The reason for this study was to establish the need for more teaching of the diabetic patient. A questionaire was used as a guide in interviewing these patients. The nurses, Miss Mary Russo and Miss Corinne Wood, have agreed we may share their interesting findings with you.

Characteristics of the Population Studied

a. Forty-two patients were studied with a diagnosis of diabetes mellitus.
b. Positive family history — twenty-four patients.
c. Age range — twenty-nine to eighty-four years (most forty to sixty years).
d. Weight range — ninety-five to two hundred forty pounds.
e. Known duration of diabetes — one to fifty years.

Type of Therapy

a. Insulin — eleven patients
b. Oral therapy — twenty-seven patients.
c. Combined — three patients.
d. No therapy — one patient.

Management of Insulin

a. Failure to know insulin dose — three patients.
b. Knowledge of hypoglycemic symptoms — ten patients.
c. Knowledge of diabetic coma symptoms — two patients.
d. Alternation of insulin site:
    1. Not at all — two patients.
    2. Of legs only — eight patients.
e. Cleansing of insulin equipment:
    1. Boiling for five minutes — seven patients.
    2. Boiling occasionally — four patients.
    3. Alcohol use only — four patients.
    4. Disposable syringes — one patient.

Identification of Diabetic State

Cards of identification — eight patients only.

Conclusions

While this study covered only three clinic visits, it produced many interesting findings. All forty-two patients were found to be aware of the proper time of dosage of their medication. Yet the knowledge of proper care of equipment and how and where to inject insulin was solely lacking. No mention is made in this study of urine testing but the same deficiency in knowledge would probobly be evident. Also shown was that only six patients had some real understanding about diabetes mellitus.

The young nurses who conducted this study concluded that most clinic-type patients require much education concerning the nature of diabetes mellitus and its proper care. They found that all patients seemed willing to learn, although each had his own rate of learning. They make a plea for patients to carry proper identification cards and recommend that a nurse should be assigned to the clinic for the sole purpose of health teaching.

We thank these young nurses for this most interesting and pertient report and hope that this article will stimulate others in the field to re-examine and re-evaluate their clinic population and their methods of teaching and handling diabetic patients.

Dr. Dorph is Chief of Metabolic Services, Wilmington Medical Center, President of the Delaware Diabetes Association.

DIABETES DETECTION DRIVE IN DELAWARE

Statement By Governor Charles L. Terry, Jr.

November 12-18, 1967 Diabetes Week

There are thousands of Delawareans who have diabetes. Many of these people are not aware of their condition.

Modern drugs enable us to control diabetes. Early detection by a simple, quick test, followed by competent medical care, can in most cases enable diabetics to continue to lead active, productive lives.

The Delaware Diabetes Association, together with the State Board of Health, is conducting a year-long Diabetes Detection Drive in Delaware in hopes of protecting the futures of many of our citizens. Detection centers are conveniently located throughout the State.

I wish to commend and wholeheartedly endorse this program. I have designated the week of November 12 through November 18 as Diabetes Week in Delaware and urge all my fellow citizens to have themselves and their families tested for diabetes.

About 5 percent of the 2,913 Delawareans screen-tested for diabetes since last June have shown "blood sugar positive" and been referred to physicians, it was reported yesterday by Dr. Marvin Dorph, president of the Delaware Diabetes Association.

The Diabetes Association, together with the State Board of Health, is in the midst of a year-long Diabetes Detection campaign at test sites throughout the state. The long-range campaign is one of only three in the nation, Dr. Dorph said, and may become a model for national campaigns of the future if it is successful.

The free screening tests are available to all but are especially recommended for persons over 40, overweight, relatives of a known diabetic, or mothers of children who weighed more than 9 pounds at birth.

The test is a quick and simple one, involving only a fingerprick and a sixty-second wait.
Test sites and their schedules are as follows:

Every Wednesday from 1:00 - 3:00 p.m.

Brandywine Medical Laboratory
1806 N. Van Buren Street
Wilmington, Delaware
Professional Clinical Laboratories
"H" Building — Suite 27
Augustine Cut-Off
Wilmington, Delaware
Naaman's Professional Lab.
2018 Naamans Road
Wilmington, Delaware
Wilmington Medical Center
Wilmington General Division
201 S. Broom Street
Wilmington, Delaware
New Castle Physicians Lab.
702 Delaware Avenue
New Castle, Delaware
University of Delaware
Student Health Dept.
Newark, Delaware
Professional Clinical Lab.
327 E. Main Street
Newark, Delaware
Kent General Hospital
South State Street
Dover, Delaware
Milford Memorial Hospital
Milford, Delaware
Beebe Hospital
Savannah Road
Lewes, Delaware
Nanticoke Memorial Hospital
Seaford, Delaware

Rotating Schedule

Kingswood Community Center, 23rd & Bower Streets, Wilmington
The second Wednesday of November, 1967, February and May, 1968.
Peoples Settlement, 408 E. 8th Street, Wilmington
The second Wednesday of December, 1967, March and June, 1968.
West Side Conservation Association, 4th & Franklin Streets Wilmington
The second Wednesday of January 1968 and April 1968.

As We Were . . .

December, 1911, Page 20-21
(*under Motor News for Doctors*)

Dr. Willard Springer, the owner of a surrey Mitchell, recently purchased a 1911 Hupmobile. He believes that the saving in tires, gasoline and oil will soon pay for the car. He intends to keep both machines.

There are twenty-six physicians in Wilmington who are owners of motor cars. The number of doctors using them throughout the State is not definitely known.

February, 1912, Page 25
(*under Motor News for Doctors*)

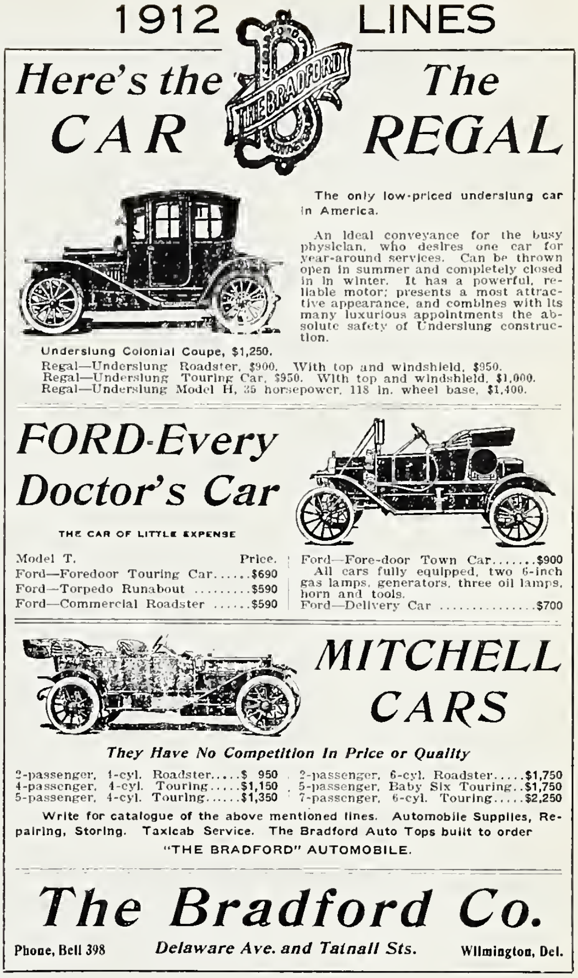
The physician today finds that he has to do away with "Old Dobbin" and relegate him to the bone yard, regardless of how faithful he may have been, and buy an automobile to take his place.

When the doctor has made up his mind to take this step, the very first thing he does is to ask his colleagues what success they are having with their several diffeernt makes of cars. The information he receives this way is bias to a great extent, for the reason that every automobile owner will say that he has a good car, regardless of all the troubles he may have had.

In the first place, physicians as a whole are known to be very poor business men, and it is the writer's experience that they know less about mechanics, and the only reason that they own an automobile is because it is a matter of business with them in more ways than one. It adds prestige, and this alone will increase a doctor's business, and with a natural increase the doctor would have in building up his practice, he soon finds that by using an automobile, he can look after his patients in an easier manner, and will have more time to devote to his office practice.

May, 1912, Page 20
(*under Motor News for Doctors*)

- Dr. J. A. Ellegood purchased a Ford runabout.


1912 LINES

Here's the CAR — The REGAL

THE BRADFORD

The only low-priced underslung car in America.

An ideal conveyance for the busy physician, who desires one car for year-around services. Can be thrown open in summer and completely closed in in winter. It has a powerful, reliable motor; presents a most attractive appearance, and combines with its many luxurious appointments the absolute safety of Underslung construction.

Underslung Colonial Coupe, $1,250.

Regal—Underslung Roadster, $900. With top and windshield, $950.
Regal—Underslung Touring Car, $950. With top and windshield, $1,000.
Regal—Underslung Model H, 35 horsepower, 118 in. wheel base, $1,400.

FORD-Every Doctor's Car

THE CAR OF LITTLE EXPENSE

Model T.	Price.
Ford—Foredoor Touring Car	$690
Ford—Torpedo Runabout	$590
Ford—Commercial Roadster	$590
Ford—Fore-door Town Car	$900

All cars fully equipped, two 6-inch gas lamps, generators, three oil lamps, horn and tools.

Ford—Delivery Car $700

MITCHELL CARS

They Have No Competition In Price or Quality

2-passenger, 4-cyl. Roadster.....$ 950
4-passenger, 4-cyl. Touring.....$1,150
5-passenger, 4-cyl. Touring......$1,350
2-passenger, 6-cyl. Roadster.....$1,750
5-passenger, Baby Six Touring..$1,750
7-passenger, 6-cyl. Touring.....$2,250

Write for catalogue of the above mentioned lines. Automobile Supplies, Repairing, Storing. Taxicab Service. The Bradford Auto Tops built to order

"THE BRADFORD" AUTOMOBILE.

The Bradford Co.

Phone, Bell 398 — *Delaware Ave. and Tatnall Sts.* — Wilmington, Del.

Vol. III *No. 3* *1912*

- Dr. Hancker purchased a Baker electric.
- Dr. J. P. Lukens purchased an Overland touring car.
- Mr. Chandler reports splendid results from his Stoddard-Dayton solid tires.

February, 1912

- Dr. E. Q. Bullock has purchased a Model 34, 1912 Buick.
- Dr. J. H. Spruance has purchased a 1912 Maxwell.
- Dr. A. Robin has purchased a 1912 Ford runabout.
- Dr. E. Postles purchased a 1911 4-passenger Cadillac.

In Brief

S. S. Hope Returns To Asia

The S. S. HOPE will sail to Ceylon next March, marking her first return to Asia since the famed hospital ship's maiden voyage. A voyage for an advance survey team of Hope medical professionals will leave June 24 for two weeks of planning sessions with Ceylon officials. This medical mission will be the seventh the S. S. HOPE has undertaken since she first set sail. Project HOPE in its short, seven year history has trained 3,450 doctors, nurses and paramedical personnel and has touched the lives of more than a million people on three continents.

What is AMDOC?

AMDOC (short for AMerican DOCtor), a non-profit corporation, is not a government agency; not religiously oriented. It is a person to person medical and educational service. AMDOC arranges assignments in foreign medicine. Its roster of hospitals in foreign areas contains numerous requests for general practioners, specialists and allied personnel whose skills are acutely needed in locations in Central and South America, the Far East, Southeast Asia, and Africa. AMDOC's assignments are acceptable for educational credit by the AAGP. Write Dennis G. Karzag, Exec. Sec., AMDOC, 27 E. Canon Perdido St., Santa Barbara, Cal. 93101, for more details and copy of AMDOC's publication which informs readers of current programs.

Pediatrics Release

Normally healthy children should not be vaccinated against influenza, despite current predictions of an increased outbreak of A2 influenza during the 1967-68 season. Only children who may suffer severe complications from the virus should receive flu vaccine. This has been issued by the American Academy of Pediatrics in a statement appearing in their October 15, *Newsletter*. The recommendations are based on evidence that currently-available influenza vaccines cause feverish or other types of reactions among many children who are vaccinated. Influenza immunization is recommended only for "children known to experience high morbidity or mortality from influenza, including children with these conditions:

1. Rheumatic heart disease, especially those with mitral stenosis.
2. Other cardiovascular disorders such as congenital or hypertensive heart disease, especially fully developed or beginning cardiac insufficiency with easy fatigue or shortness of breath.
3. Chronic broncopulmonary diseases including cystic fibrosis of the pancreas, chronic asthma, chronic bronchitis, bronchiastasis, pulmonary tuberculosis, and patients having weak or paralyzed respiratory muscles.
4. Chronic metabolic disease.
5. Chronic glomerulonephritis or nephrosis.
6. Chronic neurologic disorders.

Discussing amantadine, a drug for preventing influenza, the committee recommends that it not be used for children.

Speakers on "Ask the Doctor"

Speakers for December, 1967, on the Tuesday Radio Program, (11:05 a.m., WDEL) produced by the Medical Society of Delaware are: Dec. 5, H. Thomas McGuire, M.D., *Alcohlism;* Dec. 12, Christos S. Papastavros, M.D., *Diagnosis X-rays;* Dec. 19, Richard N. Taylor, M.D., *Surgical Treatment of Strokes;* Dec. 26. Edwin C. Katzman, M.D., *Toilet Training and Related Problems.*

Medical Seminars Of The Medical Society

These seminars will be held at the Milford Memorial Hospital from noon to 1 p.m. on the second and third Thursdays of each month.

Dec. 14, I Favel Chavin, M.D., *The Limping Child.* The diagnosis and treatment of the limping child from birth to the adult years, with a discussion of the common pitfalls in differential diagnosis.

Dec. 21, William T. Hall, M.D., *Recent Advances in Rheumatology.* An outline of the newer diagnostic tests available and the standards of treatment for the rheumatic diseases.

Personal Glimpses

Edward M. Bohan, M.D., had an article titled, "Accidentitis," published in the September issue of *Medical Times* . . . John G. Baker, M.D., Milford, was one of the eight delegates representing the diocese of Delaware at the Episcopal Seattle Convention held in October . . . William T. Reardon, M.D., presented an illustrated lecture on group hypnotherapy and reported a four-year study on fifty alcoholics treated with hypnotherapy at the tenth annual scientific meeting of the American Society of Clinical Hypnosis, October 20, at the Hilton Hotel, New York . . . G. S. Serino, M.D., was cited for his book titled, "Your Ulcer, Prevention, Control, Cure," as one of the 100 best technical books of 1966; it was also favorably mentioned in a book by Charles H. Brown, M.D., "Diagnostic Procedures in Gastroenterology," recently published by M. D. Mosby Company . . . George J. Boines, M.D., has presented his scientific exhibit on "The Management of the Multiple Sclerosis Patient" at the Michigan State Medical Society Annual Session, held in Grand Rapids on September 27-29; at the Seventy-second Annual Convention and Seminar of the American Osteopathic Association, San Francisco, October 30; and at the Forty-second Anniversary Congress of the Pan American Medical Association, Buenos Aires, Argentina, November 26-30, 1967 . . . C. Anthony D'Alonzo, M.D., as co-author with Sidney Pell, Ph.D., has had a paper published in JAMA (Oct. 2, 1967) entitled, "*Some Aspects of Hypertention in Diabetes Mellitus*" . . .

PHS Smoking Report

The PHS report summarized three and one-half years of research into the health consequences of smoking. Three major conclusions are stated:

1. Cigarette smokers have substantially higher rates of death and disability than their non-smoking counterparts, tend to die at earlier ages and experience more days of disability than comparable nonsmokers.
2. A substantial portion of earlier deaths and excess disability would not have occurred if those affected had never smoked.
3. If it were not for cigarette smoking, practically none of the earlier deaths from lung cancer would have occurred; nor a substantial portion from chronic broncopulmonary diseases; nor a portion of earlier deaths of cardiovascular origan.

Auxiliary Affairs

PRESIDENT'S ANNUAL REPORT

A rewarding year has been completed with 326 members from three component auxiliaries participating in the activities of the auxiliary program.

Health Careers screened 33 girls this year for scholarships and grants-in-aid for nurses. With the proceeds from a luncheon and fashion show and a brand new project — "*Delaware Doctors' Cookbook*," plus funds from Lions and Rotary Clubs, for whom we do the screening of prospective nurses and related health careers, we were able to give scholarships and grants to 26 girls in the amount of $5,850.

The Mental Health Committee in cooperation with the Mental Health Association packaged and distributed *Milestones to Maturity* again this year, to some 66 Delaware High Schools, and many hours of volunteer service to Delaware State Hospital and other related agencies.

The Auxiliary does not have an International Health Activities Committee. (We are still hopeful.) We do give assistance whenever possible in collecting drugs and clothing to supplement the work of other community projects. The Auxiliary sponsored a talk by Dr. Jim Turpin, head of Project Concern and $513 was raised for this relief medical organization.

Preparedness and Safety had a quiet year. We plan to sponsor and conduct another Medical Self-Help Course next year.

AMAERF Committee has been active. We did not have any special money raising project this year but were able to contribute $1169.38 by assessment, sale of Christmas Cards, memorials and appreciation cards.

Our small state is well organized in all phases of community service and many of our doctor's wives have served faithfully with other organizations in this respect. Our own special project in this field is the enlargement of the Pre-School Vision Screening Detection for amblyopia. We began last year with the Headstart children; this year we included all nursery and kindergarten schools in New Castle County that requested the service. Some 2600 children were tested. Of these, 30 required glasses and/or further treatment. The appreciation expressed by doctors and parents for this service, has been rewarding. We plan to continue the project and hope to enlarge it to include the whole State.

For a number of years our County Auxiliary has sewed small garments for the Visiting Nurses. This year we provided 275 gowns and 104 blankets for the newborn. Also we collected games and clothing for the Emily P. Bissell Hospital.

Our progress this year has been made possible by the diligent work of the committee chairmen backed by faithful auxiliary members. We look forward with confidence to continued progress next year. It has been a privilege to serve as President of the Woman's Auxiliary to the Medical Society of Delaware.

Beatrice L. Howard, *President*

These names were omitted from the list of volunteer workers in the pre-school vision screening program in the June issue. Mrs. Charles Green was a regular volunteer. Mrs. Dene Walters and Mrs. Conley Edwards were substitute workers.

Delaware Medical Journal

DECEMBER, 1967
VOLUME 39
NUMBER 12

Address

TO THE MEDICAL SOCIETY OF DELAWARE

Presented on October 28, 1967, Delaware Academy of Medicine

H. THOMAS McGUIRE, *President*

I would like to discuss with you, briefly, a man I know. A graduate of one of our recognized medical schools, he completed his internship and residence training and had passed his medical state board examinations. He felt qualified to practice medicine and opened his office. Soon he was treating patients—but what was the quality of the treatment?

There were no broad spectrum antibiotics or penicillin available. He never prescribed antihypertensive or anticoagulant drugs. He never worried about the Rh factor in pregnant women or the need for replacement transfusions in newborn babies. He did not even consider the use of cortisone in arthritis or nephrosis. He never thought of treating an allergic condition with antihistamines.

He did not give his young patients tetanus toxoid or polio vaccine. Nor did he give his older patients tranquilizing drugs. He made diagnosis of congenital heart disease but did not advise treatment by surgery. He made diagnosis of tuberculosis by physical examination and x-ray and advised rest and very occasionally something as spectacular as pneumothorax. He cared for patients in the hospital and often he and the hospital both suffered financial loss, yet he never encouraged his patients to buy hospital insurance. Prepayment medical care plans had not been formulated, much less been made available to his patients. His knowledge of mental illness was limited; psychiatrists were talked of as alienists, schizophrenia had not been discussed as a clinical entity, alcoholism was referred to disdainfully as common drunkenness. He lived in a strong era of organicism where if the patient did not have an organic disease that could be identified by an organism or an x-ray pattern, he was not ill. Neurosurgery, plastic surgery and allergy, together with the more refined and sophisticated use of the x-ray were just slowly developing.

Perhaps you are wondering how an individual of this type could be given a degree in medicine, much less be allowed to take care of the sick. I can assure you that it was both ethical and legal. For I was the man and the year was 1933.

One cannot reflect on the happenings of the past without becoming aware of our obligations to the clinicians, investigators, research people and educators. Since the foundation of medical practice is enthusiasm, continued curiosity and advances in diagnosis and treatment, one must pay tribute to those people in the profession who are continuing to search for new diagnostic techniques, new therapeutic methods and other means to add to the well-being of those people who come under our care.

PROCEEDINGS OF THE HOUSE OF DELEGATES, 1967

MEDICAL SOCIETY OF DELAWARE

The 178th Annual Session of the House of Delegates, Medical Society of Delaware, was called to order in the Delaware Academy of Medicine, 1925 Lovering Avenue, Wilmington, Delaware, on Friday, October 27, 1967, at 8:00 P.M., H. Thomas McGuire, President, presiding.

Secretary Abbiss took the roll call and a quorum was declared.

A motion was made, seconded and approved to accept the minutes of the 1966 Session as published in the Delaware Medical Journal.

REPORTS OF THE OFFICERS

(All reports were accepted as published.)

REPORT OF THE SECRETARY

Joseph W. Abbiss, M.D., ***Secretary***

Ten meetings including that of October 28 were held during this past year. Two meetings were scientific, eight were devoted to the transaction of business matters only and the dinner-dance was held October 28 at the Wilmington Country Club. All business transacted by the Society has been recorded in the minutes as presented by the Secretary.

The total membership as of October 15 is as follows:

New Castle County	386
Kent County	36
Sussex County	54
Total	476

REPORT OF THE TREASURER

Lawrence Katzenstein, M.D., ***Treasurer***

The report of the Treasurer for 1966 is in two sections. The first consists of a statement of income and expenses for the twelve months of calendar 1966. This has been prepared by Haggerty and Haggerty, certified public accountants, and is presented with some condensation from their 1966 audit of the Society's accounts.

The second section is a statement of income and expenses for the first nine months of 1967. This is not audited at the moment, since it is an interim report. The audit for 1967 will be done at the end of this calendar year.

PART I

STATEMENT OF INCOME AND EXPENSES CALENDAR 1966

Bank Balance Checking Account — December 31, 1965			$7,293.27
Operating Receipts			
Dues		$30,384.00	
Exhibits		1,040.00	
Grants — Annual Meeting			
Eli Lilly 1966		250.00	
Eli Lilly 1967		250.00	
A. H. Robins 1967		100.00	
Dividends and Interest		1,101.20	
DMJ Overhead Contribution			
Banquet		1,160.00	
Miscellaneous —Annual Meeting		268.00	
Sale of $7,000 "J" Bonds		7,000.00	
		$41,553.20	
Contra Receipts			
AMA Dues	$18,045.00		
AMA Dues Rebate	178.65		
Scholarships	2,110.00		
DMJ — Subscriptions	1,266.00		
	$21,599.65		
Contra Disbursements			
AMA Dues	$18,045.00		
AMA Dues Rebate	180.90		
Scholarships	2,500.00		
DMJ — Subscriptions	1,305.00		
	$22,030.90		
Balance from Contra Funds held in account		$ –431.25	
Total Operating Receipts			$41,121.95
Operating Disbursements			
Personnel			
Salaries		$16,815.90	
Payroll Taxes — Employer		669.90	
Hospitalization		361.02	
		$17,846.82	
Office Operation			
Contribution to Academy		$ 2,100.00	
Printing, Postage, Stationery		1,335.34	
Tel. & Tel.		1,120.05	
Audit		375.00	
Miscellaneous		719.77	
Capital Expenses & Replacement (incl. cost of Voicewriter)			
Cost of bond		210.00	
		$ 6,160.26	

Travel and Expenses		
AMA Delegate	$ 359.89	
AMA-MSEA Conference	40.00	
AMA Institute	....	
Local	388.87	
Contingency	524.61	
	$ 1,313.37	
Annual Meeting		
Stenotyping	$ 172.00	
Printing	153.75	
Prospectus	62.50	
Supper, House of Delegates	317.50	
Banquet	1,166.20	
Banquet Entertainment	100.00	
Guest Speakers	1,116.86	
Clerical Help	179.28	
Janitorial Help	29.25	
Miscellaneous	188.06	
Luncheon (reimbursed $218.00 by Kent County)	296.00	
	$ 3,781.40	
Subscriptions, Contributions and Dues		
Delaware State Science Fair	$ 50.00	
AMA-Aces and Deuces	50.00	
Conference of Presidents	25.00	
MSEA	20.00	
Delaware State C. of C.	50.00	
Shearon Legislative Service	35.00	
Better Business Bureau	35.00	
Contributions — Contingency	100.00	
Presidents & Presidents-Elect	25.00	
	$ 390.00	
Operations of Committees and Contingency Funds	$ 1,775.97	
TOTAL OPERATING DISBURSEMENTS		$31,267.82
Reimbursible Expenses	$ 4,334.45	
Reimbursed Expenses	5,308.08	
		$ 973.63+
Purchase of $7,000 Treasury Bills due 9/30/67		6,636.08−
Transfer of $5,000 to Savings Account 11/10/66		5,000.00−
Account 12/31/66		$6,484.95
Bank Balance Checking Account 12/31/66		

PART II
INTERIM TREASURER'S REPORT
OCTOBER 1, 1967

Bank Balance Checking Account — December 31, 1966		$ 6,484.95
OPERATING RECEIPTS		
	Budgeted	
Dues	$30,744.00	$30,639.00
Exhibits	1,040.00	1,950.00
Grants for Anual Meeting	250.00	500.00*
Dividends and Interest	2,774.00	895.60
DMJ Overhead Contribution	980.00	....
Banquet	1,160.00	....
Miscellaneous		60.00
	$36,948.00	$34,044.60
CONTRA RECEIPTS		
AMA Dues	$18,315.00	$27,120.00†
AMA Dues Rebate	183.05	264.99
Scholarships	2,130.00	2,137.50
DMJ Subscription	1,281.00	1,276.50
	$21,909.05	$30,798.99
CONTRA DISBURSEMENTS		
AMA Dues	$18,315.00	$27,120.00
AMA Dues Debate	183.05	
Scholarships	2,130.00	2,500.00
DMJ Subscription	1,281.00	1,276.50
	$21,909.05	$30,896.50
Balance from Contra Funds held in account		$ −97.51
TOTAL OPERATING RECEIPTS		$33,947.09
OPERATING DISBURSEMENTS		
Personnel		
Salaries	$21,380.00	$13,472.08
Employer — Payroll Taxes	713.16	620.05
Hospitalization	179.78	173.50
	$22,272.94	$14,265.63
Office Operation		
Contribution to Academy	$ 2,100.00	$ 2,500.00‡
Printing, Postage, Stationery	1,520.00	1,239.70
Telephone-Telegrams	885.00	880.52
Audit	375.00	375.00
Miscellaneous	785.00	747.37
	$ 5,665.00	$ 5,742.59
Insurance		$ 237.00
	Budgeted	
Travel and Expenses		
AMA Delegate	$ 720.00	$ 920.00
AMA-DSEA Conference	275.00	....
AMA Institute	375.00	....
Local	500.00	268.40
Contingency	750.00	444.67
	$ 2,620.00	$ 1,633.07
Annual Meeting		
Stenotyping	$ 87.00	....
Printing	250.00	....
Prospectus	62.50	$ 67.50
Supper, House of Delegates	350.00	....
Banquet	a 1,320.00	....
Banquet Entertainment	100.00	....
Guest Speakers — (Honorariums & Expenses)	1,000.00	....
Clerical Help	295.00	219.16
Janitorial Help	125.00	....
Miscellaneous	100.00	54.33
	$3,689.30	$ 340.99

Subscription, Contributions, Dues			
AMA-Aces and Deuces		$ 40.00	$ 50.00
Conference of Presidents		25.00	....
Del. Better Business Bureau		35.00	....
Del. State Chamber of Commerce		50.00	50.00
Del. State Science Fair		50.00	50.00
Med. Soc. Exec. Assoc.		20.00	10.00
Shearon Legislative Service		18.00	....
Presidents and Presidents-Elect		10.00	....
Contributions — Contingency		100.00	100.00
Blood Bank of Delaware		....	185.50
		$ 348.00	$ 445.50
Operations of Committees and Contingency Funds		$ 2,353.36	$ 1,289.06
Transfer of $15,000 to Artisan's Savings Bank		....	15,000.00
Total Disbursements		$36,948.60	$38,953.84
Reimbursible Expense	$ 1,846.10		
Reimbursed Expense	2,526.50		
			$ +680.40
Balance Checking account — October 1, 1967			$ 2,158.60
Transfer of $15,000 to Artisan's Savings Bank for purposes of drawing interest until funds are needed			$15,000.00
Total Working Fund			$17,158.60

*$350.00 paid in 1966

†Increase in AMA Dues

‡Rent Increase of $400.00

REPORT OF THE EXECUTIVE SECRETARY

Anne E. Shane, *Executive Secretary*

The Medical Society of Delaware is concluding another year of its activity. I have no wish to infringe on the reports but I would like to touch on some of the Society's activities not covered in the reports.

The Society's Roster, which has ordinarily been published every other year, was resumed this year after a lapse of four years.

This year we have been able to implement a Blood Bank Group for the members. A benefit enjoyed by group members and not available to individuals is unlimited blood replacements anywhere in the United States or North America. In addition, the 30-day waiting period for new members has also been eliminated for those who join through groups.

The Blue Cross-Blue Shield Group continues to grow. The group includes 386 physicians and their employees and families. Annual billings exceed $2,000.

Better understanding between doctors and pharmacists has been advanced by the creation of a liaison committee composed of members of the Medical Society and the Pharmaceutical Society.

The Society has been represented in a number of areas of activities by its member physicians. Reports submitted have been published in the Journal throughout the year.

A newsletter has been issued periodically to keep the physicians abreast of matters of current interest.

The exhibit space contracted for the annual meeting will bring in revenue amounting to $2,500 which will help defray the expense connected with the annual meeting. Thirty-three exhibitors will be present, and it is hoped that the physicians will patronize them to show their recognition of the financial support given our meeting by the exhibitors.

We have been fortunate in securing the services of Mrs. Henrietta Moore as assistant executive secretary. Mrs. Moore, a graduate of Western Maryland College, comes to us with a varied background of experience in teaching, market research, and real estate.

She began work in June.

I want to express my thanks to the officers and members of the Society for their help and courtesy during the year past.

REPORTS OF THE STANDING COMMITTEES

(All reports were accepted as published.)

COMMITTEE ON BUDGET

Lawrence Katzenstein, M.D., *Chairman*

The Committee on Budget has met, reviewed the expense and income of the Society for the year past and the audit report for calendar 1966, and has discussed the needs of the Society for the year to come. We recommend adoption of the following budget for calendar 1968:

Receipts	
Dues	$30,384.00
DMJ — Subscriptions	1,266.00
Scholarships	2,110.00
AMA Dues	34,090.00
AMA 1% Coll. Rebate	179.00
Exhibits & Grant ($250.00)	4,000.00
Dividends and Interest	2,900.00
DMJ Overhead Contributions	980.00
Banquet	1,166.00
Total	$77,075.00
Contra	
AMA Dues	$34,090.00
AMA Dues Rebate	179.00
Scholarships	2,110.00
DMJ — Subscriptions	1,266.00
Total	$37,645.00
Working Balance	$39,430.00
Disbursements	
Personnel	$21,380.00
Payroll Taxes	844.00
Blue Cross-Blue Shield	165.00
Total	$22,389.00

OFFICE OPERATION	
Contribution to Academy	$ 2,500.00
Printing, Postage, Stationery	1,700.00
Telephone and Telegrams	1,200.00
Audit	375.00
Miscellaneous	1,000.00
Total	$ 6,775.00
Travel and Expense	
AMA Delegate	$ 1,000.00
AMA-MSEA Conference	275.00
AMA Institute	375.00
Local	500.00
Contingency	750.00
Total	$ 2,900.00
Annual Meeting	
Stenotyping	$ 172.00
Printing	154.00
Prospectus	63.00
Supper, House of Delegates	185.00
Banquet	1,320.00
Banquet Entertainment	258.00
Guest Speakers—Expenses	800.00
Freight Charges	100.00
Wiring	50.00
Porters	50.00
Clerical Help	200.00
Janitorial Help	50.00
Miscellaneous	250.00
Total	$ 3,652.00
Subscriptions, Contributions and Dues	
AMA-Aces and Deuces	$ 50.00
Conference of Presidents	25.00
Delaware Better Business Bureau	35.00
Medical Society Executive Association	20.00
Delaware State Chamber of Commerce	50.00
Delaawre State Science Fair	50.00
Presidents and Presidents-Elect	10.00
Contributions — Contingency	270.00
Total	$ 510.00
Operations of Committees and Contingency Funds	$ 3,204.00
TOTAL DISBURSEMENTS	$39,430.00

THE PROGRAM COMMITTEE

Robert L. Meckelnburg, M.D., *Chairman*

The scientific program constitutes this report.

REPORT OF THE COMMITTEE ON PUBLIC LAWS

William O. LaMotte, Jr., *Chairman*

The Committee on Public Laws held two formal meetings during the past year, reviewing health legislation before the General Assembly, studying proposed health legislation, developing specific legislative proposals to effect Society policy, and recommending to the Council positions on State and National legislative matters. Individual members of the committee have met with legislators, testified before House and Senate committees, and maintained a close liaison with other groups interested in health legislation, particularly the Health Planning Committee of the Community Services Council, the Health Facilities Planning Council, and the Association of Delaware Hospitals.

The following selected items are representative of the matters dealt with by the committee:

H.B. 138 — An act relating to the control of radiation. This is similar to legislation backed by the Society in previous years, but no action has been taken on this particular bill.

H.B. 197 — An act to make the coroner of each county a voting member of the Board of Post Mortem Examiners. This would change the existing law, which states: "The duly elected coroner of each county shall be a non-voting member of the Board." It was Medical Society policy to support existing law in this regard, so that the vigorous objections of the Medical Examiners to the new proposal were supported by the Society. The sponsor of this bill, however, apparently plans no action.

H.B. 214 — An act relating to licensing and regulation of clinical laboratories and clinical laboratory personnel. This bill has remained in committee pending study, and should legislation in this category be deemed wise, a substitute bill will probably be introduced.

S.B. 63 — This bill was intended to make payment for chiropractic services mandatory under Title XIX in Delaware. It passed the Senate, but was defeated in the House. It was vigorously opposed by this Society, and by the Medical Advisory Committee of the Department of Public Welfare.

S.B. 64 — This bill would have made payment to chiropractors mandatory under various prepayment plans, including Blue Cross, Blue Shield. The latter organization joined the Association of Delaware Hospitals and the Medical Society of Delaware in active opposition to this bill. While it passed the Senate, it was defeated in the House.

S.B. 128 — This bill would change the enabling legislation in Delaware in respect to Title XIX recognizing under the law the Medical Advisory Committee, and giving this committee and the Board of the Department of Public Welfare more freedom in determining the benefits to be provided under this program. It has long been this Society's policy to support this type of "permissible" legislation, so that when knowledgeable people see the need for a change in an evolving program, such changes can be made wihout seeking new legislation. This bill passed the Senate unanimously, and at the same time an amendment was defeated which would require that a chiropractor be on the Medical Advisory Committee. This bill is expected to be acted upon favorably by the House, and an amendment in the House requiring coverage of optometric services is expected to be dropped.

S.B. 157 — This is an act to provide for the development, establishment and enforcement of standards for the construction, maintenance and operation of hospitals and the licensing thereof. This is essentially a hospital licensing act, has passed the Senate, and will have hearings in the House this fall. Your committee studied this at length and had the benefit of expert advice from hospital people. The Association of Delaware Hospitals strongly supports this bill, and your committee has recommended similar support from the Medical Society of Delaware.

S.B. 171 — States the circumstances under which an individual may direct the disposition of his body or any part or parts thereof after his death; stipulates that the individual may receive no remuneration or other thing of value for such disposition; requires witnesses; states the circumstances under which post-mortem procedures may be done and by whom; and stipulates the proper burial of the remains.

Your committee discussed this proposal and was inclined to be in favor of its intent, but has at this writing made no definite recommendations to the Council.

The committee was charged to study the need for state legislation which would provide a physician who serves on à utilization review committee immunity from litigation arising from the action of such a review committee. Legal counsel reported that no statutes exist in this state to cover such immunity, and he prepared a proposed statute modeled after the California law. Subsequent discussion concluded that until more time had elapsed in the operation of developing utilization review procedures, this committee would not actively pursue the enactment of this legislation.

The committee on Venereal Disease has over the past year proposed certain changes in Section 702 of the Delaware Code relating to venereal disease. Your legislative committee studied these proposals and had legal counsel draft a suitable statute to effect them. This proposed statute was referred to the council with the recommendation that the Society back such legislation.

The Delaware Chapter of the American Physical Therapy Association has for more than a year been seeking this Society's support for a mandatory licensing law. Your committee is in favor of supporting such legislation provided it clearly does not prevent a physician from delegating physical therapy to an assistant, and provided it should not permit a physical therapist to treat except on the prescription of a physician. Negotiations and discussions are not completed on this issue.

The committee held several discussions on the abortion law in this state. Like in most states, therapeutic abortion is legal in Delaware only to preserve the life of the mother. The committee agreed to recommend to Council that the Society should encourage and support discussion in the General Assembly on liberalization of the abortion law.

Many other matters of local and national interest were discussed during committee meetings and, in some cases, dealt with by individual members of the committee. Among these were recommended positions on the Social Security Amendments of 1967 insofar as they concerned health and medical care. At the time of this report, a satisfactory bill (HR 12080) as far as the position of American medicine is concerned has passed the House, and hearings on this bill have just been completed before the Senate Finance Committee.

The work of this committee has been made easier by the cooperation of staff, especially Mrs. Anne Shane, and by the cross-communications existing with other disciplines, especially the Association of Delaware Hospitals through Mr. Richard R. Griffith, and the Health Facilities Planning Council through Mr. Clifford Foster. Our thanks to all. Finally, your chairman wishes to thank all those society members and others who over the past decade have been helpful to him in discharging his duties and responsibilities as chairman of this committee. The time has come to shift the burden to other shoulders.

REPORT OF THE PUBLICATION COMMITTEE DELAWARE MEDICAL JOURNAL

Report of the Editor

Robert B. Flinn, M.D., *Chairman*

During the last year several changes have been made in the staff of the Delaware Medical Journal. William J. Holloway, M.D., and Bernadine Z. Paulshock, M.D., have been appointed as Associate Editors. An Editorial Board has been formed with the duties of reviewing all manuscripts, assisting in editing them, and making recommendations concerning publication. The following people have been appointed to the Editorial Board: Arthur F. Zimmerman, M.D., Henry H. Stroud, M.D., John H. Furlong, M.D., Lemuel C. McGee, M.D., Charles L. Reese, III, M.D., Kazuo K. Kimura, M.D., G. Dean MacEwen, M.D., Herman Rosenblum, M.D., Daniel Lieberman, M.D., Oscar N. Stern, M.D., Stuart W. Rose, M.D., and Leonard P. Lang, M.D. This board has functioned very well, and many of the changes noted in the Journal are related to their efforts. In addition to the above appointments, the physician and pharmacist page has been extended to include from other Journals clinical notes on drugs. Many other minor changes have occurred in the makeup of the Journal, and the editors and the Editorial Board are actively engaged in trying to increase the volume of articles submitted to the Journal for publication.

However, because of some of these changes and the increased correspondence, the Journal has acquired a new office within the Delaware Academy of Medicine and additional secretarial assistance.

In spite of the increased expenditures we are happy to report that the financial statement of the Journal reveals that for the first time in several years the Journal ends the fiscal year with a net profit. This happy change in financial statement is due to an increase in the National Advertising and an improved collection system from subscriptions.

BUSINESS MANAGER'S REPORT

Mrs. Anne E. Shane

A.

Statement of Receipts and Disbursements — August 1966 through July 1967

RECEIPTS		
Advertising — National	$22,232.07	
— Local	4,911.29	
Subscriptions	2,038.00	
Reimbursed Expense	62.13	
Interest	43.75	
Roster Sales	3.00	
Single Copy Sales	18.75	
TOTAL RECEIPTS		$29,308.99
DISBURSEMENTS		
Insurance	$ 92.85	
Payroll	3,211.40	
Payroll Tax	1,068.72	
Printing of Journal	17,033.50	
Committee Expense	114.90	
Blue Cross-Blue Shield	195.20	
Photographs and Plates	288.91	
Postage	492.07	
Audit	75.00	
Addressing	59.00	
Telephone	108.44	
Office Furniture	78.55	
Rent	300.00	
Dictaphone Repairs	19.00	
Proofing	142.01	
Office Expense	200.95	
TOTAL DISBURSEMENTS		$23,480.50
Operating Profit		$ 5,828.49

B.

Savings Account	
Balance (with accrued interest) August 1, 1965	$ 6,125.48
Deposits or Withdrawals	NONE
Interest Accrued	531.67
Balance (with accrued interest) July 31, 1967	$ 6,657.15

C.

Assets	
Operating Account	$ 7,159.38
Savings Account	6,657.15
U. S. Treasury Bonds	3,502.38
Total	17,318.91
Less: Owing to Medical Society of Delaware	2,407.59
Net Assets	$14,911.32

REPORT OF THE WOMAN'S AUXILIARY

Beatrice L. Howard, *President*

This report was published on the Auxiliary page in the November issue of the Delaware Medical Journal.

THE ADVISORY COMMITTEE TO THE WOMAN'S AUXILIARY

John W. Howard, M.D., *Chairman*

The committee has been regularly informed of the Auxiliary activities and is pleased to report that the Auxiliary Officers together with the able assistance of our Executive Secretary, Mrs. Anne E. Shane, is completing a profitable and interesting year. Our society is fortunate to have such an active and dedicated group of ladies associated with our profession.

REPORTS OF THE SPECIAL COMMITTEES

(All reports were accepted as published.)

COMMITTEE ON AGING

Allston J. Morris, M.D., *Chairman*

The Committeee on Aging has held no meetings during the past year.

It should be reported that the chairman and one of the members of the committee, Edward Gliwa, M.D., continued during the past year to be active members of the Joint Council for Improvement of the Health Care of the Aged. A one day symposium on nursing care of cancer patients was presented by the Joint Council in cooperation with the American Cancer Society in April of 1967. A number of the members of the Medical Society of Delaware participated in that program, and on behalf of the Medical Society of Delaware, I would like to thank those doctors at this time. They were: Robert Frelick, M.D., William Vandervort, M.D., Jerome Kay, M.D., Carl Glassman, M.D., Carlo Cuccia, M.D.

It should also be reported to the Society that upon unanimous consent of the five-member organization of the Joint Council for Improvement of the Health Care of the Aged — namely, the Medical Society of Delaware, the Delaware Dental Society, the Delaware Nurses Association, the Delaware Association of Nursing Home Operators, and the Delaware Hospital Association — the Joint Council was disbanded. The action was taken because it was felt that since its inception in 1960 or 1961, the functions of the Joint Council had been lragely taken over by other agencies, both governmental and private, and that the one remaining effective function which the Joint Council was performing — namely, the annual symposia for nursing home personnel — could be properly taken over by the Governor's Commission on Aging. The Governor's Commission on Aging did agree to take over the sponsorship of an annual symposium for nursing home operators. Following this assurance, the Joint Council disbanded.

COMMITTEE ON EDUCATION

Leonard P. Lang, M.D., *Chairman*

The committee presented a symposium entitled "Ethics and Morality in Medicine." This was held at the Delaware Academy of Medicine on Saturday, March 4, 1967, and was made possible by a grant from the Lederle Laboratories. The speakers were outstanding individuals and this was one of the most stimulating discussions I have been privileged to hear. The attendance, however, was so disappointing that I question the wisdom of attempting programs of an intellectual nature. Perhaps future chairmen should stick to "bread and butter" topics.

For the second year, a program of visiting lecturers at the Nanticoke Hospital was organized by this Society with the financial help of the State Board of Health and the Delaware Heart Association. These have been most successful and should be carried on.

The problem of the "Radio Seminars" remains unsolved. The attendance, at least in Wilmington, has been so poor that I question the advisability of continuing this activity.

GRIEVANCE BOARD REPORT

Willard F. Preston, M.D., *Chairman*

The Grievance Committee held one meeting this year. They reviewed a case referred by the Sussex County Medical Society. Because of the confidential nature of business transacted by this committee the details of this case will not be specified in this committee report.

COMMITTEE ON MATERNAL MORTALITY

John M. Levinson, M.D., *Chairman*

During 1966 there were 10,458 deliveries and two maternal deaths in the State of Delaware. This gives a rate of 1.9 per 10,000 which compares favorably with the national rate of 3.3 per 10,000 in 1965, the latest national figures available.

One death occurred following Cesarean section, the obstetrician feeling that the patient died of a massive amniotic fluid embolism along with hypofibrinogenemia. There is question of a placenta abruption and excessive blood loss which was discussed at a clinical conference following the patient's death. Unfortunately, a post mortem examination was not obtained and hence, an exact etiologic cause of death is lacking.

The second death was that of a seventeen year old, single girl who was brought to a community hospital in our State, dead on arrival. Her mother claimed that she had been "hit by a cow" but later she was to say that an attempt had been made to cause an abortion by the use of chemicals. Little further information is available other than the police were not able to uncover further information. The death certificate states death was due to "toxemia and shock due to vaginal application of caustic chemicals due to criminal attempt of abortion."

Although we may be proud of the lowest rate of maternal morality in the history (that is, recorded history) of the State of Delaware, the findings of this Committe should make us mindful of prompt and effective treatment of hemorrhage, one of the greatest threats to the pregnant patient. Lastly, criminal abortion as a cause of death might be seen less frequently if Delaware would only adopt a more realistic abortion law.

MEDICAL ECONOMICS COMMITTEE

Davis G. Durham, M.D., *Chairman*

At a meeting of the Medical Economics Committee held August 1, 1966, PRO Sefvices, Inc., successor to PRO, Inc., presented some changes in the basic plan of the Medical Society's Retirement Plan under the Keogh Act.

PRO Services, Inc., now service some sixty medical and dental societies in the four states of Delaware, Pennsylvania, New Jersey and Ohio. Total assets invested by participants in these Keogh Plans now total in excess of $2,000,000. PRO Services, Inc., proposed that the funds in these four states be combined into a single fund which will be registered with the SEC and will be thereafter used as the investment vehicle for equity contributions to the Society's Keogh Plan.

The advantages were described as follows:

1. *Better diversification.* A larger fund will allow investments in a broader number of securities.
2. *Better cash flow.* A larger fund with more participants will assure a more continuous flow of investment funds during the year and allow the investment advisor the opportunity to better time its investment recommendations.
3. *Lower costs.* The effect of a larger fund will be to immediately reduce current charges made against the fund in Delaware by the Trustee Bank and the Advisor.
4. *Greater participation.* Physicians and others will not be able to invest money in the fund outside of Keogh because the fund will now be registered.

Under the plan, PRO Services, Inc., is authorized to administer the Plan and Trust.

The Medical Economics Committee approved the changes in the PRO Plan and Trust and recommended the changes to the Council for the Council's review and approval.

At a council meeting held July 20, 1967, the President and Secretary were authorized to sign the new Medical Society of Delaware Group Keogh Plan and Trust when the Fund had become registered with the Securities and Exchange Commission.

On September 5, 1967, the Securities and Exchange Commission notified PRO Services, Inc., that PRO Fund, Inc., was not registered. On September 12, 1967, all participants of the Plan received a letter from PRO Services, Inc., explaining in detail how the changes will work.

COMMITTEE OF MEDICAL SCHOLARSHIPS

Gordon Keppel, M.D., *Chairman*

The Committee of Medical Scholarships met in Dover on June 14th. Thirteen applications were considered, 12 from Wilmington and 1 from Dover. Mr. Charles F. Yeagle, III, Dartmouth '67, of Wilmington was awarded $500 for his first year at the Medical School of the State University of Buffalo with the understanding that the scholarship would be renewed for each of his 4 years if he remained in good academic standing.

At the meeting of the House of Delegates a year ago, the Committee was asked to evaluate how useful a grant of $500 annually could be in the 1960's, also if the Society should consider awarding more than one grant per year. The Committee recognizes the arguments in favor of increasing the amount of money to be granted in scholarships to worthy medical students, but we were not inclined to recommend to the House of Delegates that the Society increase the present $5 annual contribution per physician.

COMMITTEE FOR MEDICAL SCHOOL FOR DELAWARE

James E. Marvil, M.D., C. Anthony D'Alonzo, M.D., *Co-Chairmen*

Several meetings of our Committee with members of the Medical School Foundation for Delaware have been held this year.

We are glad to report that a tax exempt status for our Foundation has been granted by the Director of Internal Revenue and the Delaware Tax Department.

Allied organizations are being contacted in regard to support for the work of our foundation. C. Anthony D'Alonzo, M.D., has contacted Doctor James Thompson of the Delaware Dental Society, who assures us of their support. The Delaware State Nursing and Delaware Pharmacist Societies will also be contacted.

With the new administration at the University of Delaware, a change of attitude in regard to a Delaware Medical School is a possibility. This is now being discussed with John Truzlo, M.D., who is presently working at the University on the subject of medical education.

Medical School Committee Members:

James E. Marvil, M.D., Charles Levy, M.D., Howard Wilk, M.D., Leonard P. Lang, M.D., Frank T. O'Brien, M.D., James T. Metzger, M.D., Otakar J. Pollak, M.D., Anthony C. D'Alonzo, M.D., James Beebe, Jr., M.D., Willard F. Preston, M.D., and Daniel J. Preston, M.D.

Foundation Trustees:

President	J. E. Marvil, M.D.
Vice-President	Harry W. Lynch, Sr.
Secretary-Treasurer	Charles Levy, M.D.

Physician Members:

James E. Marvil, M.D., Charles Levy, M.D., Howard Wilk, M.D., Frank T. O'Brien, M.D., Rhoslyn J. Bishoff, M.D., Willard F. Preston, M.D., James T. Metzger M.D., Otakar J. Pollak, M.D., James Beebe, Jr., M.D., and Andrew M. Gehret, M.D.

Advisor to Foundation: Walter Lee, M.D.

Lay Members:

Harry W. Lynch, Sr., Edmund H. Harvey, W. Emerson Wilson, David N. Williams, Esq.

Physicians are reminded that tax exempt gifts of money and property may now be given to the Delaware Medical Foundation in care of the Secretary-Treasurer, Charles Levy, M.D. Patients and others interested in helping this foundation may also make bequests of money or property to the foundation. We especially solicit physicians to bear this fact in mind as opportunities arise, particularly when this foundation appears a more appropriate choice than others selected.

COMMITTEE ON MEDICAL SERVICE AND PUBLIC RELATIONS

David A. Levitsky, M.D., *Chairman*

I. Radio Program, "Ask Your Doctor"

During the past year the radio program has continued to function without any major difficulties.

After receiving a letter from a medical group in another part of the country stating that we were infringing on their patent rights by using the name "Doctor's House Call," the name was formally changed to "Ask Your Doctor."

In order to publicize the program, a poster has been prepared and distributed to our membership. We hope that our members will display these posters publicly in their waiting rooms.

II. The Medical Explorer Post

The Explorer Post, which is a medical specialty post, began to function in the spring of 1967. John H. Furlong, Jr., M.D., consented to be the advisor for the post and Jack Zahn, M.D., his associate advisor. We were pleased by the response of the young membership and hope that it will continue to function as a successful post in the future. As you know, the object of the Medical Explorer Post is to offer high school students the opportunity of observing some aspects of the practice of medicine. The meetings are held two nights a month during the school year.

III. Sex Education

Due to the increased interest in sex education both in school and in the home, it was thought that the physicians of Delaware should play a leading part. A steering committee on sex education, which can work closely with the State Board of Education and other groups and which can indoctrinate our physicians in the general thoughts on sex education, was appointed. Thomas Brooks, M.D., is chairman of this committee.

Since there is a great demand for speakers to talk to PTA groups and other groups on sex education, a speaking bureau was organized. John W. Alden, Jr., M.D., was appointed the county chairman for New Castle; Arthur F. Zimmerman, M.D., the county chairman for Kent and W. Philip Portz., M.D., the county chairman for Sussex. Speakers have been obtained and our sex education program has been started.

COMMITTEE ON MEDICARE ADJUDICATION

Sidney Stat, M.D., *Chairman*

The Committee on Medicare Adjudication has considered three claims during this past year.

The first involved open reduction with internal fixation of fractures and approximately one week later secondary closed reduction of fractures. The committee reviewed the operative report and came to the conclusion that the fee requested by the surgeon was fair, and recommended that it be paid by the Government.

The second case involved was a right tympanoplasty type #4. The committee felt that the fee, as requested by the surgeon represented compensation which was reasonable and compatible with the general level of Medicare fees and recommended that the Government pay the amount requested in satisfaction of the surgeon's claim.

Finally the committee was called upon to review the fee charged for a splenectomy, jejunorrhaphy, gastroenterostomy, repair of gastocolic omentum, and suture of laceration of lip-upper. According to the Dependents' Medical Care contract, payment can be made for only one procedure performed through the same incision at the same time. However, there was evidence that time and skill were required beyond that usual for payment of one procedure through the same incision. Accordingly, the committee recommended that a fee higher than scheduled in the contract be paid.

The committee continues to believe that the Government accepts its decision in good faith. So far as is known, the Office for Dependents Medical Care has consistently paid the fee we have recommended.

COMMITTEE ON MEDICAL-LEGAL AFFAIRS

James T. Metzger, M.D., *Chairman*

The Committee on Medical-Legal Affairs continues to concern itself primarily with the Malpractices Screening Panel and has enjoyed excellent cooperation from the Delaware Bar Association.

For the first time, the Bar Association has borne one half of the expense of the operation of the Committee, and the use of the Malpractice Screening Panel has become essentially mandatory by agreement with the Delaware Bar.

A new interprofessional Code of Ethics and Conduct was written by the Joint Committee, and published in the January, 1967 issue of the Delaware Medical Journal.

The future plans of the Committee will for the coming year be centered on the establishment of a routine for physicians' charges relative to litigation, and it is anticipated that this will take several years to become a standard practice between the Medical Society and the Bar Association.

COMMITTEE ON PREPAYMENT

Lemuel C. McGee, M.D., *Chairman*
R. Douglas Sanders, M.D., *Co-Chairman*

Five meetings of the Prepayment Committee were held during the year. At the meetings many phases of the operation of such plans currently in effect in Delaware were discussed.

At the August 3, 1967, meeting assurance was given that recomputation of the 90th Percentile would be made by October 1 and yearly thereafter, thus keeping the Prevailing Fee Program in orientation with economic trends. On the basis of this, the committee recommended to the Council extension of the Prevailing Fee plan to employees of Electric Hose and Rubber Company.

At the August 10th meeting a subcommittee consisting of

Joseph E. Belgrade, M.D., *Chairman*
Herbert Baganz, M.D.
Howard Wilk, M.D.
James McNinch, M.D.

was appointed to review the operation of the Prevailing Fee Program, recommend criteria for extension of it to other employed groups and remommend dates for determination of 90th Percentile.

The Prepayment Committee recommended to the Council that any further extension of coverage be delayed until the findings of this subcommittee had been fully considered.

Pursuant to requests made by the Society and by Blue Cross and Blue Shield of Delaware, Inc., the dependents of Servicemen Medical Program (now called CHAMPUS) was scheduled to become effective in this state November 1, 1967. This substitutes a "usual and customary" basis of payment for the outdated fixed fee basis.

The Medical Review Subcommittee considered 123 claims referred to it at twelve meetings. These references were:

No. of Cases	*Program*	*No. Referred to Committee*	*Percentage Referred*
24,525	Prevailing Fee	90	.36%
37,001	Medicare	33	.08%

COMMITTEE ON MEDICINE AND RELIGION

T. H. Hogshead, M.D., *Chairman*

The activities of the Committee on Medicine and Religion were geared to establishing several programs which we hope will do two things: First — accomplish several definite short-term objectives, and second — pave the way for continuing progress toward more long-term objectives.

Robert L. Dewees, M.D., attended the National Meeting of State Chairmen of Medicine and Religion Committee, held in Chicago, Illinois, February 18-19, 1967. He made a comprehensive report of this meeting in a paper published in our Delaware State Medical Journal. In this paper he incorporated some interesting suggestions — imaginative but also realistic.

Prior to attending this meeting, Doctor Dewees had received a letter from Robert W. Frelick, M.D., Director of the Department of Medicine at the Wilmington Medical Center, suggesting that the Academy of Medicine consider sponsoring a program that would involve physicians, clergymen and funeral directors in the general problem of securing autopsies, particularly, from certain ethnic groups.

It has been recommended that the Committee on Medicine and Religion co-sponsor with the Academy of Medicine a meeting to which pathologists, clergymen, funeral directors, coroners, medical examiners and probably some practicing physicians be invited to discuss this question.

This suggestion incidentally was prompted by the need to raise the low autopsy percentage, particularly, at one or two of our hospitals.

A number of informal discussions have been held with a number of individuals representing some of these groups. Furthermore, we are planning a small meeting in the early autumn of representatives of all these groups. This is to be followed as soon thereafter as possible, by a larger meeting (perhaps open to the community), at which this important subject could be aired in the format of a panel discussion representing each of the disciplines involved. Efforts are presently underway to organize these meetings.

These get-togethers could accomplish several things: First, they would be educational in helping the different disciplines more thoroughly understand each other's point of view. Second, the clergymen in particular, could transmit to their parishioners the need for and value of autopsy examinations and thereby improve the percentage.

Thomas H. Hogshead, M.D., has been conducting monthly seminars on various topics in the field of medicine and religion with groups of priests of the Catholic Diocese of Wilmington, held under the auspices of the Catholic Social Services.

He has assisted pastors of a number of denominations, usually on an individual basis, helping them render more effective counseling to their parishioners. This is primarily an educational program.

Also he has conducted a series of seminars with the staff of the Delaware Department of Corrections which included a number of topics dealing with the practical application of medical and religious concepts in the Correctional Department's general rehabilitation program.

Finally, John B. Baker, M.D., Sarah Bishop, M.D., James J. Gallagher, M.D., Dewey Nelson, M.D,. Richard H. Weiss, M.D., Robert L. Dewees, M.D., and Robert W. Frelick, M.D., have provided invaluable assistance in achieving these objectives.

REPORT OF THE SCHOOL HEALTH COMMITTEE

E. F. Gliwa, M.D., *Chairman*

The Committee has continued to work closely with the State Board of Education and the State Board of Health in an effort to improve the health of the school-age child. As a result of our action last year in requesting the State Board of Health to provide for a School Nurse Consultant-Coordinator, a request for funds for this purpose was denied by the State Legislative Leaders. However, as a result of our action, the State Board of Education finally established a position of School Nurse Supervisor and received budget approval for such a position. Unfortunately, as of this writing, the position has not been filled.

The School Health Committee has been asked to review the Delaware Secondary School Athletic Association's Wrestling Weight Control Code because of alleged abuse pertaining to forced weight loss to make a certain weight class. There is also some concern about the unlimited heavyweight classification whereby there may be a large weight disparity between wrestlers. A copy of the Report of the Committee on Medical Aspects of Sports pertaining to Wrestling and Weight Control, which was published in the August 14, 1967, issue of the Journal of the American Medical Association, has been forwarded to each Chief School Officer in the state. This report sets down excellent guidelines on Wrestling and Weight Control, and it was urged that the Chief School Officer make the report available to his wrestling coach.

The Committee will continue to study this problem and work with the School Health Advisory Committee, and the Athletic Association of the Delaware Secondary Schools.

COMMITTEE ON VENEREAL DISEASE

Donald Schetman, M.D., *Chairman*

The Venereal Disease Committee met on September 14, 1967, to reconsider the proposed amendment to Section 702, Chapter 7, Title 16. The amendment had been returned to committee after it was rejected by the Council of the Medical Society. After a thorough discussion of the proposed amendment and some minor modifications, it was the feeling of the committee that this amendment was of sufficient importance to the public health of the citizens of Delaware to warrant its submission to the Council for reconsideration.

COMMITTEE ON MENTAL HEALTH, ALCOHOLISM AND DRUG DEPENDENCE

Herman J. Bennett, M.D., *Chairman*

The Council at its May 25, 1967, meeting combined the Committees on Alcoholism and Drug Dependence and Mental Health into the Committees on Mental Health, Alcoholism and Drug Dependence.

Because of scheduling difficulties, a Committee Meeting has not been held as yet. The members have, however, communicated with each other on several matters. The feasibility of a brochure covering Mental Health Laws in Delaware in nonlegalistic terms is being studied. Richard J. Kester, M.D., visited the Methadone Treatment Center in New York and sent his written report to the members.

The 28th International Congress on Alcoholism will be held in Washington, D. C., September 15-20, 1968. This meeting is sponsored by the American Medical Association and will be covered by the Committee.

Physicians can obtain a pamphlet on glue sniffing by writing to the Youth Service Commission, Box 2679, Union Street Station, Wilmington, Delaware 19805.

REPORTS OF DELEGATES AND LIAISON

(All reports were accepted as published)

AMA HOUSE OF DELEGATES

H. Thomas McGuire, M.D., *Delegate*

(This report appeared on the President's Page of the July issue of the Delaware Medical Journal.)

REPRESENTATIVE TO THE ACADEMY OF MEDICINE

Norman L. Cannon, M.D., *Liaison*

As your representative to the Academy of Medicine this past year, I have attended the meetings of the Executive Committee and have kept abreast of the activities of the Academy.

This year the Academy demolished the properties acquired last year, which were adjacent to its main building; and a very nice parking lot has been built there. The Academy has continued to serve as a meeting place for a tremendous number of medical activities, including the Wilmington Medical Center, County and State Society, and served as a focal point for medical activities in the County. The library has continued to increase its acquisitions and is being used more and more, as well as relating to the library activities both in the Medical Center and in the chemical industries of Delaware. The Academy still co-sponsors the Delaware Science Fair and presents an annual award to the winners in the Biological Sciences Division. The Academy is gaining momentum in the direction of a study of rural health care in Delaware, and under Doctor Allston Morris' chairmanship a committee is beginning to move in this direction as suggested by the Penrod Report.

The total membership of the Academy is 557. It is divided as follows: Regular Members — 401; Affiliate Members — 20; Associate Members — 136.

The Student Financial Aid Committee, this July granted loans to 19 individuals, totaling $19,500. Since the inception of the program, a total of $91,400 has been distributed in loans and grants to 56 individuals.

The pattern of having a speaker at the Annual Meeting has been continued. This was well attended in January of this year, and a similar program is planned for 1968.

In summary, the Academy is continuing to expand its activities and finding new ways to be of service to the medical profession and the community as a whole.

THE AMERICAN CANCER SOCIETY

Oscar N. Stern, M.D., *Liaison*

To the Council:

The following is the report of the American Cancer Society, Delaware Division, for the period September 1, 1966, to August 31, 1967.

Professional Education and Training

Medical Affairs Literature

CA-Journal for Clinicians — subscription to all physicians, schools of nursing, Visiting Nurse Association, hospital staff rooms and resident physicians.

CANCER NEWS — subscriptions as above.

JOURNAL CANCER — To all hospital libraries and Academy of Medicine; Books and Publications in amount of $316 to Delaware Academy of Medicine; 52 kits prepared for dentists in oral cytology programs; 35 kits of materials prepared for nurses' refersher course at Veteran's Administration Hospital; All physicians received copies of professional education boklets, "Oral Cytology," "Detection and Diagnosis of Skin Cancer," "Unproven Methods of Cancer Treatment," "Malignant Melanoma" and "Statistics on Cancer"; a 8,559 pieces of medical affairs literature distributed to dentists, nurses, physicians and nursing students 7,839 pieces of public education literature distributed by VNA, through physicians' offices and through dental offices.

Visiting Lecturer

David A. Karnofsky, M.D., addressed the New Castle County Medical Society on "Recent Advances in Chemotherapy of Cancer."

Seminars

Three follow-up Oral Cytology programs were held for dentists, October 3 and 13 and August 17, co-sponsored by Delaware State Dental Society, State Board of Health and ACS. Thomas A. McFall, D.D.S., Associate Professor of Oral Medicine at the University of Pennsylvania, presented the Oct. 3 program at the Dover Air Base; James C. Baker, D.D., the Oct. 13 program at the Academy of Medicine; and Allen Schiek, D.D.S., the August 17, program. Fifty-four dentists received instruction in the technique of obtaining oral cytology smears and cytology kits were distributed to them.

Student practical nurses attended two sessions at Academy to learn of Society's services and programs. O. N. Stern, M.D., addressed the December and May programs on topic of cancer.

Sponsored attendance of resident physician to American College of Physician's Course, "What the Internist Knows About Cancer," at Francis Delafield Hospital in New York, December 5-9, 1966.

Sponsored attendance of two registered nurses from local nursing homes to attend ACS course on Improved Care of Cancer Patients in Nursing Homes held at Calvary Hospital, New York in February.

Symposium for Nursing Homes Staff in April entitled, "Excellence in Cancer Nursing." Co-sponsored by the Joint Council to improve the health care of the aged and the Society, the program was designed to improve the care of patients with cancer who are admitted to nursing homes.

Sponsored attendance of Division President to the 1967 ACS Scientific Session in Dallas in May.

Scholarships

$3,000 scholarship grant to University of Delaware for nine undergraduate awards to students in the biological sciences.

Film Showings

New Castle County Unit — 88 professional film showings

Kent County Unit — 8 professional film showings

Sussex County Unit — 27 professional film showings

Delaware Division — 3 professional film showings for statewide programs

Displays and Exhibits

"Unproved Cancer Therapy" for New Castle County Medical Society in Sept., 1966.

"Value of Early Diagnosis" for Annual Meeting, Medical Society of Delaware in Oct., 1966.

"Pitfalls in Cancer Management" for Annual Meeting, Academy of General Practice in Dec., 1966.

Display on Nursing, Society's Service Program and surgical supplies for Symposium for Nursing Homes Staff in April, 1967.

Display on breast and uterine cancer for Annual Meeting, Medical Assistants Association in May.

Students Nurses Association Convention in May, display on cancer nursing and uterine cancer.

"Role of Dentist in Cancer Control" for Annual Meeting, Delaware State Dental Society.

Speakers Bureau

28 New Castle County physicians filled 47 speaking dates

3 Kent County physicians filled 4 speaking dates

1 Sussex County physician filled 2 speaking dates

Grants-In-Aid

Renewal of grant for training non-medical personnel in the Analysis of Diagnostic Methods of Brain Lesion Localization at Wilmington Medical Center, Robert L. Meckelnburg, M.D., chief investigator.

Renewal of grant for intra-arterial infusion at Wilmington Medical Center, Robert Frelick, M.D., chief investigator.

New grant in amount of $5,570 awarded Robert L. Meckelnburg, M.D., for the purpose of investigating Seleno-Methionine in scanning of the pancreas at the Wilmington Medical Center.

Public Health Education Committee

Business and Industry — 35 companies had programs involving the distribution of 15,439 pieces of literature to employees and customers; 18 film showings for 860 employees in various plants of the Du Pont Company with two physicians as guest speakers; 117,000 pieces of literature distributed by Delmarva Power & Light Company to their customers statewide with April billings; letters sent to 169 business and industrial firms informing of Society's educational program, with sample kits of educational materials sent to 6 firms requesting them.

Clubs and Organizations — 25 programs, 29 film showings, 2,200 pieces of literature and 12 physician speakers for clubs and organizations.

Neighborhoods — 9,462 pieces of literature distributed by local pharmacies and beauty shops, in literature racks at Electra Arms Apts. and Community Social Services Office, by Welcome Wagon, to patients at Emily Bissell Hospital, by hospitals and State Board of Health.

Schools and Colleges — 335 general cancer film showings; total audience 12,984; 5,105 pieces of literature and 144 posters distributed. 161 individual requests for literature filled. CANCER NEWS subscription provided for all high school libraries in the state.

Public Information Committee

Radio — 4 sets of radio platters distributed to 11 radio stations in state as part of year-round public information program; Mrs. Cann's "Women in the News" program (Station WDEL) featured the Society in two series of programs — April programs featured the Society's programs and services and the importance of the annual checkup; while a series of six programs in July and August discussed six cancer sites with area physicians participating; spot announcements were carried by 9 radio stations during Crusade with 11 Crusade kits distributed to stations; members of the staff, Division and Unit boards participated in four additional feature radio programs during the year.

TV Programs — 2 spot announcements placed on permanent loan with WHYY-TV and 1 with ETV station in Dover.

Displays and Exhibits — Hessler, Inc., an outdoor advertising firm contributed 20 billboards in January carrying a uterine cancer message, as well as Crusade billboards in April; 6 displays rotated in three downstate hospitals and one Wilmington hospital during year; Society had total of 44 public information displays during April.

Crusade Literature — 100,000 pieces of literature distributed statewide during Crusade.

Movie Theaters — prints of two 35mm films placed on permanent loan with local theaters.

State Board of Health Report

68 film showings of ACS films on permanent loan; 7 filmstrip showings; new film, "Time for Decision," placed on permanent loan basis.

Interagency Council on Smoking and Health

Film Showings

New Castle County — 617 film showings; total audience 24,995

Kent County — 73 film showings; total audience 4,594

Sussex County — 53 film showings; total audience 3,680

Materials Distributed to Schools

Teachers' Reference Material — 1,932 pieces

Students Pamphlets — 32,710 pieces

Filmstrips — 10

61 individual requests for literature on smoking

Posters — 747

Displays — 4 (DSEA Mts.; Kent Vocational Center; Science Fair, Claymont H.S.)

Programs — Smoking and health programs were held in a total of 18 elementary, 17 junior and 35 high schools (public, parochial, private3 in Delaware; 7 physicians addressed classes or assembly programs in 12 schools.

Press Conferences — two conferences were held for hiph school newspaper editors this year. On December 8 a conference was held for Kent and Sussex students in conjunction with the Delaware State

News and on January 11 for New Castle County in conjunction with the News-Journal.

Smoking and Health Week Activities: January 8-14, 1967

Delaware ETV Network featured a film presentation to schools repeatedly on a school day in Jan.; two representatives serving on the Council participated on a 5-minute special over Channel 12, WHYY-TV, Jan. 9; two physicians participated on the Carl Jones program on radio station WILM, Jan. 11; Council representative participated in an interview over station WAMS and the Dave Eldridge program, Jan. 9; area psychologist discussed the smoking topic on WDEL's "Emphasis Delaware" program, Jan 9.

University of Delaware — James M. Hofford, M.D., addressed Health and Physical Education Methods Class of future teachers at the University in March. Kits of available resource material were distributed to the students for their future use.

Council aiding Delaware Congress of Parents and Teachers in Delaware No-Smoking Project by arranging programs for schools and PTA programs and providing necessary materials. Programs scheduled for three PTA programs involving area physicians and Mrs. Robert Frelick, Project Chairman and Council representative.

May 16-18 — three 30-minute closed circuit ETV programs to schools on smoking topic. These were evening programs for parents, teachers, school nurses, etc. Participiating were Council representatives and students in Delaware schools.

Display prepared for Out-Patient Clinic at the Delaware Division on smoking and health by two University of Delaware students in July. 650 pieces of literature and 12 posters used.

Interagency Council, smoking and health exhibit at Harrington State Fair in July; 7,200 pieces of literature distributed.

Patient Service

	New Castle	*Kent*	*Sussex*	*Total*
New applications	129	22	27	178
Applications approved	117	22	27	166
Total patients assisted	190	41	36	267
Drugs supplied	67	8	19	94
Aid with hospital bills	4	3	7	14
Transportation	20	9	7	36
Homemaker service	3	—	1	4
Dressings patients	33	16	9	58
Home Care (Del. Div.)	1	—	—	1
Room and board while receiving treatment	1	—	3	4
Gift and Loan closet*	62	13	7	82
†Visiting Nurse Asso-Association	50	—	—	50

*Colostomy, ileostomy, hospital room equipment, etc.

†Supported by $6,000 grant annually to VNA.

Dressings

New Castle County distributed
23,631 dressings
2,538 bedpads
24 gowns
Kent County distributed
15,656 dressings
156 bedpads
Sussex County distributed
16,220 dressings
Total: 55,507 dressings, 2,694 bedpads, 24 gowns

Community Service

1. Continued to underwrite registrar's salary at St. Francis Hospital.
2. Continued to co-sponsor with Delaware Tuberculosis and Health Society, a Homemaker Service for Central Delaware.
3. Purchased equipment for use in treatment of cancer patients at Nanticoke Memorial Hospital, Milford Memorial Hospital and Beebe Hospital.

THE DELAWARE HEART ASSOCIIATION, INC.

Lemuel C. McGee, M.D., *Liaison*

I am attaching a list of the officers of the Delaware Heart Association as a report from the liaison member between the Medical Society of Delaware and the Delaware Chapter, American Heart Association.

Please note that as of April, 1967 Alfred E. Bacon, Jr., M.D., became President of the Delaware Heart Association. He thus becomes the logical person to serve as liaison for 1967-1968.

Officers of the Delaware Heart Association currently are:

Alfred E. Bacon, Jr., M.D.	President
Frank H. Wetzel, Ph.D.	Senior Vice President
Charles M. Moyer, M.D.	Vice President
Mrs. William R. Humes	Vice President
Lloyd R. Leslie	Vice President
Mrs. Thomas J. Pellegrene	Secretary
George M. MacLeod	Treasurer

Members of the Executive Committee are the following:

Alfred E. Bacon, Jr., M.D.
Mark G. Cohen, M.D.
Robert L. Dewees, M.D.
Mrs. Alexis I. duPont
Mrs. William R. Humes
Mrs. Charles G. Knodel
Richard Lennihan, Jr., M.D.
Lloyd R. Leslie
Charles Levy, M.D.
George M. MacLeod
Lemuel C. McGee, M.D.
Joseph M. Messick, M.D.
Charles M. Moyer, M.D.
Mrs. Thomas J. Pellegrene
David J. Reinhardt, III, M.D.
Mrs. William R. Stevens
Richard N. Taylor, M.D.
Harry Walker, M.D.

Frederick Walter
Frank H. Wetzel, Ph.D.

THE DELAWARE DIABETES ASSOCIATION

Herbert M. Baganz, M.D., *Liaison*

The American Diabetes Association continues to be active in Delaware principally through the Delaware Diabetes Association which has active professional and lay members. At the 14th Annual Session of the Assembly of State Coordinators and Affiliates held in August 1967 the major subject discussed was the transition of the national Association from a professional organization to a voluntary health agency. These and other discussions were attended by Lewis B. Flinn, M.D., Governor for Delaware of the American Diabetes Association; Marvin H. Dorph, M.D., President of the Delaware Diabetes Association; and Miss Carolyn Medill, Dietitian, a lay member.

A year-long detection drive aimed at uncovering hidden diabetics began in Delaware June 14 under the joint sponsorship of the Delaware Diabetes Association and the State Board of Health. Tests are performed every Wednesday at 11 locations throughout the State of Delaware. Starting August 9 three Wilmington neighborhood locations became test sites. These neighborhood locations will rotate as test sites so that each will be used every third month. Method of testing is the Dextrostix (Ames Company) using the level of 130 mg %. Individuals tested whose Destrostix result is above this level have a venous blood sugar drawn immediately at the test center. These individuals are then informed of the result, either negative or positive. If positive, letters are sent to them as well as to their physicians.

Total statistics for June and July are as follows:

Total tested	1649
Dextrostix Positive	212
Blood Sugar Positive	86

The mothers of diabetic children, approximately 66 members, meet four times a year. At the request of these parents, meetings are now held for diabetic children. Three of these meetings have been held and are well attended and accepted by the children. The Association sponsored four diabetic children to camp this summer.

Professional and lay educational meetings have been held during the year including: Rachmiel Levine, M.D., Past President of the American Diabetes Association and presently professor of medicine at New York Medical College, and a workshop session with local physicians in attendance. The active membership in the Delaware Diabetes Association is now 300.

THE DELAWARE TUBERCULOSIS AND HEALTH SOCIETY

Gerald A. Beatty, M.D., *Liaison*

Statistics obtained from the Department of Vital Statistics of the Delaware State Board of Health indicate that up to August 1967, there has been a slight decrease in new tuberculosis cases diagnosed in comparison with the same period in 1966. At last count 648 residents were receiving treatment in the hospital or at home as compared with 575 in 1956. This is due to the increase of new cases detected last year.

The case detection program has been reviewed annually and changes made to make it more effective. There has been increased emphasis placed on the Child Centers program. This consists of statewide tuberculin testing program of all school enterers and and retesting of previously negative reactors is being done in seventh grade in the City of Wilmington. Society furnishes without cost the materials for the tuberculin test to the schools and also to the private physicians. The use of INH as a prophylactic tool is being encouraged with positive reactors in this group. The mobile unit teams of the Society and the State Board of Health continue to play an important phase of the case detection program. Approximately 80,000 PFX x-rays are taken each year by the mobile units and at the Society. This is a free service at both places.

Through the combined efforts of the State Board of Health and the Delaware Tuberculosis and Health Society, a project working toward improving clinic services has been approved by the United States Public Health Service. This provides financial support on a non-matching basis.

Research Study

As a result of our research program of 1965, in which a cooperative study of the tuberculin Tine test and the Mantoux test, evidence has been established that the Tine test is valuable in mass screening. A report of this study was made available during this year.

In line with the interest of the Society in respiratory diseases, support is being given to the Pleural--Pneumonia-like Organism Laboratory with the Wilmington Medical Center, Delaware Division. This is supervised by William J. Holloway, M.D.

For their eighth annual lecture, the Society will be co-sponsor with Academy of Medicine in presenting an outstanding physician in the pulmonary physiology area.

The Society continues to evaluate the effect of air pollution on the general health of the community. The committee of the Medical Society of Delaware and the Society are cooperating in maintaining current accurate source of research material on this subject.

The Society is increasing its work in the respiratory disease area through cooperation with the Pulmonary Function Laboratory at the Wilmington Medical Center, Delaware Division. The treatment center at the Emily P. Bissell Hospital is receiving attention and support by the Society.

In line with the increased attention to the respiratory disease program, physicians are now receiving specially designed information regarding the development and research in this area. The Conference on Smoking and Health held for high school students is another step in prevention of respiratory diseases. This Conference was jointly sponsored by the American Cancer Society, Delaware Division, and the Delaware Tuberculosis and Health Society.

The Society has given increased attention to the Professional Education and Training in the nursing field. Together with the Kent General Hospital, the Society financially aided Wesley College to inagurate their new nursing curriculum. The Society is also sponsoring a health educational series with the Extension Division of the University of Delaware and the Delaware Association of Hospitals. This will be in the form of extension courses and educational television programs for all hospital personnel.

The Society's activities include case detection, nursing care with the Wilmington Visiting Nurse Association, rehabilitation, nursing scholarships at the University of Delaware and research in the entire respiratory area.

THE DELAWARE NURSES ASSOCIATION

R. Douglas Sanders, M.D., *Liaison*

Delaware Board of Nursing
July 1, 1966 - June 30, 1967

Members

L. Virginia Hodgson — President
Newark, Term expires November, 1967
Ada E. Moratti
Wilmington, Term expired August, 1966
Waiting for Governor to appoint successor
Lillian R. Wagner
Dover, Term expires July, 1968
Edna G. McSweeney — Secretary-Treasurer
Rehoboth Beach, Term expired July, 1967
S. Margery Jarmon
Wilmington, Term expires July, 1968

Executive Director

Vacant

Assistant to the Executive Director

Mary Catherine Heery

Office Secretary

Jane S. Richardson

Meetings

Eleven Board meetings were held.

One meeting was held with the Practical Nurse Advisory Committee to the Board.

The Board met in closed session 2 days to review drafts of the new series of the licensing examinations in practical nursing.

The Board met a total of 5 days to administer the licensing examinations.

Annual Election of Officers

June 5, 1967

S. Margery Jarmon, Director of Nursing, Governor Bacon Health Center, was elected president; Lillian R. Wagner, Department of Public Health, was elected secretary-treasurer for the fiscal year 1967-1968.

Functions of the Board

1. Establish curricula and standards for educational programs preparing persons for licensure.
2. Survey and approve all schools of professional and practical nursing.
3. License professional and practical nurses by:
   a. Examination
   b. Endorsement
   c. Annual re-registration
4. Maintain up-to-date file of all nurses currently registered; maintain file of all inactive nurses.
5. Maintain record of all financial transactions — cash collections and disbursements.
6. Prepare annual request for budget appropriations.
7. Keep record of all proceedings of the Board.
8. Compile and submit an annual report to the Governor.
9. Provide representation at national, regional and local meetings of professional and community groups.
10. Participate in construction of licensing examinations.
11. Adopt rules and regulations to carry out provisions of law regulating practice of nursing.
12. Compile statistical data relating to this agency.
13. Provide for security of records.
14. Conduct hearings upon charges calling for disciplinary action of a licensee.
15. Hold conferences relating to licensure procedures.

Licensing Examinations

The National State Board Test Pool Examinations are the official licensing examinations for both professional (Series 166 and 168) and practical (Form 567) nursing.

I. Professional Nursing

Two examination sessions were held for professional nurses; 160 wrote the examination; 141 passed the examination and were issued the certificate of licensure.

II. Practical Nursing

Two examination sessions were held for practical nurses who graduated from approved programs; 58 wrote the examination; 51 passed the examination and were issued the certificate of licensure.

Nursing Programs Approved by the Board

Diploma Program

1. Beebe Hospital School of Nursing, Lewes
2. Delaware Hospital School of Nursing, Wilmington
3. Memorial Hospital School of Nursing, Wilmington
4. Milford Memorial Hospital School of Nursing, Milford
5. St. Francis Hospital School of Nursing, Wilmington
6. Wilmington General Hospital School of Nursing, Wilmington
7. Nursing School of Wilmington (initial approval)

*Programs phased out September, 1967

Associate Degree

Wesley College, Dover (initial approval)

Degree Program

University of Delaware Department of Nursing, Newark.

Practical Nursing Program

1. H. Fletcher Brown Technical High School, Wilmington, adult program.
2. H. Fletcher Brown Technical High School, Wilmington, high school program.
3. Sussex County Vocational-Technical Center, Georgetown, high school program.
4. Kent County Vocational-Technical Center, Woodside, adult program (initial approval).

Survey visits were made to two schools conducting diploma programs in professional nursing; Wesley College, which is opening an Associate Degree program in professional nursing and two schools conducting practical nurse programs.

ADDITIONAL BOARD ACTIVITIES

1. Furnished information for surveys and research studies conducted nationally, regionally, locally.
2. Meeting regarding a proposed professional nursing program to be conducted by Wesley College.
3. Meetings with individuals and groups relative to implementation of the new law.
4. Attended annual meeting of the Delaware Nurses' Association.
5. Board President participated in the following:
   a. Program sponsored by the Tri-State Hospital Association on nursing education at Delaware State Hospital.
   b. Meetings of the Delaware Nurses' Association Committee on Nursing Practice.
   c. Meetings of the Delaware Nurses' Association Committee on Private Duty Directory.
   d. Attended meeting for all state agencies regarding fiscal regulations and accounting procedures.
   e. Attended Annual Meeting of the American Nurses' Association Committee of State Boards of Nursing and the Annual Educational Conference for Professional Employees and Board Members in New York.
   f. Attended National League for Nursing Biennial Convention in New York.
   g. Program participant at a meeting of the Nursing Homes Association of Delaware.

REINSTATEMENT OF LAPSED LICENSES

Thirty-seven registered professional nurses and eight licensed practical nurses were granted approval for the reinstatement of lapsed licenses upon application to the Board.

Our law requires annual renewal of registration. The license expires December 31 of each year; the license of any nurse who has not renewed or requested inactive placement by January 31 of each year becomes a lapsed license. Reinstatement may be granted on satisfactory explanation for such failure to renew. It is illegal to practice nursing without a current active Delaware license.

It should be noted that this Board has been functioning since July, 1966, without an Executive Director. While there have been prospective applicants, they were no longer interested when the salary of $6,500 was quoted. This is the *beginning* practitioners salary as recommended by the A.N.A.

Therefore, the activities and services of this Board have been greatly curtailed in spite of the hard and diligent work of the office state and Board members. Consultation services to schools of nursing care was almost nonexistent. Requests for information regarding the status of nursing in Delaware was slow in preparation because of the lack of a professional nurse staff. The Board feels that a more realistic approach to salary and expenses must be made clear to the citizens of the state and the budget requests for 1968-1969 will reflect these needs.

This Board gratefully acknowledges the assistance and cooperation of other state agencies, nursing organizations, employers of nurses, members of the State Legislature, individual nurses and all others. This assistance and cooperation better enables the Board to carry out its responsibiilty to protect the welfare of the citizens of our state through the law regulating the practice of nursing.

STATISTICAL REPORT
1966-67

	Examinations		Endorsements In		Endorsements Out		Re-registration		Cash Collections	Meetings	Conferences	Studies
	RN	LPN	RN	LPN	RN	LPN	RN	LPN				
July			12	4	8	2	15	1	$ 512.00	1	2	
August			11	1	16		10	2	256.00	1	2	
September			17	2	17	1	12	3	2,106.00	1	1	1
October	102	38	11		6					3	3	2
November			14	2	8		1938	318	12,124.25	1	5	1
December			6	2	10	1	1223	252	7,375.00	1	2	2
January			19	1	11	3	447	162	3,551.00	1	1	
February		20	16	1	11		345	21	1,376.00	1	2	1
March			15	3	14	1	20	3	277.00	2	2	
April			17	4	8		54	11	1,050.00	1	4	1
May			14	6	14	3	13	5	279,00	1	5	1
June	58		16	3	16	3	25	3	1,462.00	3	2	1
Total	160	58	168	29	139	14	4102	781	$30,368.25	17	31	10

FINANCIAL REPORT	Cash Collections	$30,368.25	
	Amount Appropriated	23,473.00	
	Disbursements	12,751.75	(Plus $417.50 end of year bills transferred to next fiscal year)

THE MENTAL HEALTH ASSOCIATION OF DELAWARE

Herman J. Bennett, M.D., *Liaison*

In September, 1966, the Mental Health Association program began with the re-opening of the Jefferson Preschool, a nursery school facility for the emotionally disturbed children. Once again because of limited finances the school restricted its enrollment to 6 students, 5 from the greater Wilmington area and one from Dover.

Also the noon Film Forum held in downtown Wilmington began operation. The first series of films and discussions commenced in September and continued for five weeks.

A new venture in the area of parent-child relationships was undertaken in cooperation with St. Albans Episcopal Church in Brandywine Hundred. The program consisted of 5 sessions with a lecture being presented at each session followed by small group discussion and then a question and answer period taking up the last ¾ hour. Over a hundred residents of the northern suburbs were in attendance.

During 1966 approximately 675 individuals throughout the State of Delaware came to the MHA in search of guidance provided by the Information and Referral Service. More than half of these were referred to other agencies for additional assistance.

Madison House, the halfway house for ex-mental patients sponsored by MHA began its second year of operation. By the close of 1966 a total of 35 men were in residence during the year, 26 of whom left to resume their places in the community. Only one patient was re-admitted to Delaware State Hospital. In addition, during this past program year, arrangements were made for the Department of Mental Health to assume responsibility for Madison House and commencing the first of July, 1967, staff from the hospital assumed responsibility for the program. The administration of Madison House continues with MHA and will do so until June 30, 1968, at which time the DMH will assume full responsibility.

A new program at DSH under the auspices of the Hospital Volunteer Committee of MHA began in January, 1967. The program called *Operation Homecoming* provided the opportunity for 5 soon-to-be-released patients from DSH to begin the transition back into the community. The program continued for a period of 12 weeks with MHA volunteers acting as guides in familiarizing the patients with the community in all its aspects.

The program year 1966-67 saw the MHA open its office in Dover which is located at 109 S. Bradford Street. Mr. Joseph Kerr of the Association staff has already assumed staff responsibility for the downstate area. Plans are soon to be finished for the opening of a branch office in the Georgetown area.

One of the great efforts of the year was the dinner held in Dover in March, 1967, at which time the legislators and their wives and MHA volunteers assembled together for the purpose of informally discussing the problems related to Delaware's responsibility with regard to treatment of the mentally ill in all its aspects. This program will continue again in this next year.

The MHA co-sponsored a Kent County Resource Seminar with the Kent County Mental Hygiene Clinic in May, 1967. This meeting, hopefully, will lay the groundwork for continued dialogue among the professionals in Kent County with regard to mental health resources.

As is the practice of MHA to afford a professional group in the community with additional information regarding the care and treatment of the mentally ill, the Association conducted a workshop for LPN's. This is the first time that this group has participated in such a program. In addition, a workshop on human relations was undertaken with a group of secretaries of the University of Delaware in the Newark area.

The teacher training project, which was undertaken early in 1966 at the Cedar Hill School in Wilmington, was continued with teachers in the De La Warr district beginning in January, 1967.

It is hoped that the Association will be in a position to work closely with the Delaware Academy of General Practice in the presentation of a postgraduate course in psychiatry similar to our program that was held several years ago. Planning efforts have not yet begun but are anticipated in the near future.

Other groups within the Medical Society will be contacted to determine if the Association can be of any assistance in their advanced or post graduate training.

The MHA of Delaware continues to combat mental illness by attempting to reach all of the citizens of the state and by using every resource within its power. The Association sees itself only as the tool. It is the *people behind the tool* who must provide the power and it is only through their support that success of the Association will be realized.

THE CHILD DIAGNOSTIC AND DEVELOPMENT CENTER OF DELAWARE, INC.

Henry H. Stroud, M.D., *Director, Liaison*

The Child Diagnostic and Development Center of Delaware, Inc., whose establishment was assisted by the Medical Society of Delaware, has been in contiuous operation since the last Annual Report in September of 1966. In the last year, 154 new patients were seen for evaluation and 105 old patients have returned for follow-up examinations. The number of referrals has continued to increase from private physicians, clinics, service agencies and schools. At the present time, the waiting list approximates 3 to 4 months before new referrals can be seen for evaluation.

As of January 1, 1967, the Child Diagnostic and Development Center of Delaware, Inc., has been financed by Children's Bureau, Department of Health, Education and Welfare. The federal funds are administered through the State Board of Health. Fees for service are assessed patients' families who can afford to pay for the evaluation, and these funds received are returned to the Federal Government. At the present time, there appears to be no problem financially in the continued operation of the Center.

During the winter, an evaluation of the Center's activities by a special committee of its Board of Directors was accomplished. The data were collected from parents, agencies referring patients to the Center and physicians who have referred patients. The results of the evaluation were considered quite favorable, and the few deficiencies noted have been corrected.

It is our feeling that the Center is providing a service in the evaluation of handicapped children that is needed throughout the State, and it is felt the services will expand with the passage of time.

COMMITTEE FOR THE STATE BOARD OF VOCATIONAL REHABILITATION

S. Ward Casscells, M.D., ***Liaison***

The Liaison Committee for the State Board for Vocational Rehabilitation had no business to transact during the past year and, therefore, no meetings were held. The information which follows is taken from the Annual Report to Governor Charles L. Terry from the State Board of Vocational Rehabilitation.

New records were set again this year in the number of disabled persons rehabilitated into employment. 730 individuals were rehabilitated in comparison with 640 for last year. In addition, 1,445 other persons were in the process of being investigated or were receiving some services. This year, an Innovation Project was started to assist people suffering from cancer and heart conditions.

Of the 730 disabled individuals, 85 were unemployed at the time of the referral. The average wage prior to rehabilitation was $6.30 per week, and after rehabilitation, it amounted to $56.71 per week. Included in these 730 persons were 95 receiving welfare benefits with 188 other pendent members in their respective families.

On the basis of the number of rehabilitations, Delaware for the second consecutive year ranked tenth in the nation. Of special interest is the fact that the average cost of rehabilitating an individual in Delaware was $775, the third lowest in the country. As might be expected, an increase in the overall case load is anticipated in the future, and the Delaware Division hopes in the near future to be able to rehabilitate as many as 1,000 Delawareans a year.

As evidenced from this report, the State Board for Vocational Education and Rehabilitation continues to serve a most useful and important function. The economic and humanitarian advantages, both to the individuals concerned and the State of Delaware, are incalculable.

Postscript: Other than to summarize the Annual Report of the State Vocational and Rehabilitation Service, the Liaison Committee, of which I am the only member, had no duties and appears to serve no useful function. It is my recommendation that this committee be abolished.—S.W.C.

THE DELAWARE ASSOCIATION OF MEDICAL ASSISTANTS

Carl I. Glassman, M.D., ***Liaison***

The Delaware Association of Medical Assistants, New Castle County Chapter, met on a regular basis at monthly intervals for both business and informational meetings. A series of guest lecturers and visiting speakers provided not only educational material for the members of the Association, but aided materially in their continuing education in the field of Medical Assistants.

The Delaware Association of Medical Assistants held its State Convention on May 13, 1967, at the Academy of Medicine in Wilmington. A very successful meeting was held in which the Medical Society contributed largely to the program.

Election of officers occurred at the morning business session on May 13, 1967, and a slate of officers, duly nominated and elected, were installed.

On April 19, 1967, the New Castle County Chapter of the Delaware Association of Medical Assistants had its election of officers and these were duly installed.

The Delaware Association of Medical Assistants continues to grow. Its aim of improving the quality of medical assistants remains a noble goal.

The Counselor recommends that the Medical Society of Delaware give more active support by more vocal endorsement of this Association. I feel that not enough of the physicians of Delaware are aware of the high quality and aims of the Delaware Association of Medical Assistants.

REPORT OF THE NOMINATING COMMITTEE

Charles M. Moyer, M.D. — *Chairman*
Harold S. Rafal, M.D.
David N. Sills, Jr., M.D.
Norman P. Jones, M.D.
G. Barrett Heckler, M.D.

Your Committee on Nominations has met and considered positions to be filled for the year October, 1967 through October, 1968. We respectfully submit the following nominations:

Vice-President — Charles Levy, M.D., — Wilmington
Secretary — Joseph W. Abbiss, M.D. — Wilmington
Treasurer — Lawrence Katzenstein, M.D. — Wilmington
Representative to the Delaware Academy of Medicine — Norman L. Cannon, M.D. — Wilmington

Committee on Program

Daniel J. Preston, M.D. — Chairman, Wilmington
Herman Rosenblum, M.D. — Wilmington
Carlo A. Cuccia, M.D. — Wilmington

Committee on Publications

Robert B. Flinn, M.D. — Chairman, Wilmington

Davis G. Durham, M.D. — Wilmington
Joseph W. Abbiss, M.D. — Wilmington

Committee on Public Laws

Allston J. Morris, M.D. — Chairman, Wilmington
Rhoslyn J. Bishoff, M.D. — Dover
Christopher R. Donoho, M.D. — Wilmington
James E. Marvil, M.D. — Laurel
William J. Vandervort, M.D. — Wilmington
Arthur F. Zimmerman, M.D. — Dover

Committee on Budget

Lawrence Katzenstein, M.D. — Chairman, Wilmington
Charles Allen, M.D. — Dover
A. E. Bacon, M.D. — Wilmington
James Beebe, Jr., M.D. — Lewes
Charles Walker, M.D. — Wilmington

Members of the Board of Blue Cross-Blue Shield of Delaware, Inc.

Conley L. Edwards, M.D. — Wilmington
John J. Egan, M.D. — Wilmington
James Chase, M.D. — Dover
H. Thomas McGuire, M.D. — New Castle
K. S. Russell, M.D. — Wilmington
A. H. Seeger, M.D. — Wilmington

Board of Medical Examiners

James Beebe, Jr., M.D.
Andrew M. Gehret, M.D.
George R. Spong, M.D.
Leslie M. Dobson, M.D.
Charles Allen, M.D.
Joseph W. Abbiss, M.D.
Martin Gibbs, M.D.
Harry J. Repman, M.D.
Richard C. Hayden, M.D.
Harold S. Rafal, M.D.

Delegate to the American Medical Association

H. Thomas McGuire, M.D.

Alternate Delegate to the American Medical Association

W. O. La Motte, Jr., M.D.

Term of office: January 1, 1968 through December 31, 1970.

RESOLUTIONS

Resolution No. 1

Whereas, the Delaware Criminal Code is being revised; and,

Whereas, the New Castle County Medical Society at its January 17, 1967, meeting passed a resolution strongly favoring and supporting a liberalization of the appropriate section of Delaware Criminal Code to permit the termination of gestation under broader conditions; and

Whereas, the Council of the Medical Society of Delaware passed a resolution endorsing the liberalization of the abortion law in the State of Delaware; therefore be it

Resolved, that the Medical Society of Delaware make known and support changes in the current law consistent with modern medical thinking and modern moral philosophy to permit termination of gestation under the following conditions:

(1) There is documented medical evidence that continuance of the pregnancy may threaten the health or life of the mother, or
(2) There is documented medical evidence that the infant may be born with incapacitating physical deformity or mental deficiency, or
(3) There is documented medical evidence that continuance of a pregnancy, resulting from legally established statutory or forcible rape or incest may constitute a threat to the mental or physical health of the patient;
(4) Two other physicians chosen because of their recognized professional competence have examined the patient and have concurred in writing; and,
(5) The procedure is performed in a hospital accredited by the Joint Commission on Accreditation of Hospitals.

Introduced by: Catherine P. Johnson, M.D.
Marvin V. Andersen, M.D.
Thomas R. Brooks, M.D.

Report of the Reference Committee

The Committee recommends the adoption of the resolution. The resolution was adopted.

Resolution No. 2

Be it resolved that membership on the State Board of Examiners be limited to two consecutive terms followed by a leave of absence of at least one year before being eligible for another two consecutive terms.

Kent County Medical Society

Report of the Reference Committee

The Committee recommends the resolution be tabled until such time as the ad hoc committee appointed to study the matter, makes its report to the Council.

Resolution No. 3

Whereas, an act proposing an amendment to Article XII of the Constitution of the State of Delaware, relating to Public Health, was introduced in the Legislature and designated as S.B. 232; and

Whereas, this legislation, if enacted, will bring all matters relating to public health, either physical or mental, under the supervision and control of a Department of Health, which shall be presided over by a Secretary of Health, and the said Department would assume all the duties and powers now vested in the State Board of Health and in the Board of Trustees of the Department of Mental Health; and

Whereas, the New Castle County Medical Society realizes that there are other public agencies providing health care; and

Whereas, creation of a single authority for all the matters of public health will be most effective; therefore be it

Resolved, that the Medical Society of Delaware support the enactment of the S.B. 232; and be it further *Resolved*, that this act also include all services and public agencies providing health care in the State of Delaware.

New Castle County Medical Society

Report of the Reference Committee

The Committee recommends the adoption of this Resolution. The resolution was adopted.

Resolution No. 4

Whereas, the Mayor of the City of Wilmington has indicated that he will propose to the Wilmington City Council the closing of the Wilmington City Board of Health; and

Whereas, he will request the State Board of Health to provide all public health activities within the City of Wilmington; and

Whereas, the State Health Department already provides some of the community health services in the City of Wilmington; and

Whereas, the operation of the present City Health Department has been resuming less and less responsibilities; and

Whereas, the health problems in the City of Wilmington and the surrounding metropolitan area could be more efficiently, economically and effectively served by a single administrative health agency; there be it

Resolved, that the Medical Society of Delaware support the proposal of the Mayor of Wilmington requesting the Delaware State Board of Health to take over all the Public Health Services which are presently vested on the City Board of Health; and be it further

Resolved, that adequate appropriations be allocated to accomplish the above; and be it further

Resolved, that study be undertaken to determine the feasibility of a future formation of an independent Metropolitan Health Department.

New Castle County Medical Society

Report of the Reference Committee

The Committee recommends the adoption of the resolution omitting the word independent in the final line and substituting "a" for "an" in the final line. The resolution was adopted with noted changes.

Resolution No. 5

Whereas, cigarette smoking has been proven to be a cause of pulmonary and cardiac disease and

Whereas, the hospitals of the State of Delaware are dedicated to the treatment of disease,

Resolved, that the Delaware State Medical Society recommend to the hospitals of the state that the sale of cigarettes and tobacco products be banned from their premises.

Frank T. O'Brien, M.D.

Resolution No. 6

Whereas, the United States Government has at last become cognizant of air pollution and a commission has been set up in Delaware for the control of said air pollutents,

Resolved, that the Delaware State Medical Society recommend to the hospitals of the state that they control their smoke emissions from their stacks by a suitable device.

Frank T. O'Brien, M.D.

Resolutions No. 5 and No. 6 arrived in the Society office after the Reference Committee met and therefore were not considered by the Reference Committee, Resolution No. 6 was adopted.

The resignation of President-Elect Doctor Charles Moyer who sustained a heart attack was accepted with regret. Doctor Daniel Preston was elected President-Elect by unanimous vote of the House of Delegates to succeed to the Presidency, October 28th.

J. Leland Fox, M.D., was the recipient of the Distinguished Service Award given annually by the Medical Society of Delaware in recognition of outstanding service and substantial contributions to medicine in the State of Delaware. Dr. Fox's present illness necessitated his resignation in August as President-Elect of the Medical Society of Delaware for 1966-1967.

The House of Delegates then established the Academy of Medicine, Wilmington, as the site of the 1968 Annual Meeeting to be held October 25-26, 1968. Whereupon, at 11 o'clock, p.m., October 28, 1967, the 178th meeting was adjourned.

In recognition of the members of the Society who were lost through death during the past year, the assembly arose for a moment of silence as the names were read:

A. Gerald Lessey
George W. K. Forrest
Harry S. Howard
Lawrence J. Jones
W. Oscar La Motte,, Sr.
John A. Craig

The complete report of the Proceedings of the House of Delegates is on file in the Medical Society office and is available to members for reference.

"Science, like life, feeds on its own decay. New facts burn old rules; then, newly developed concepts bind old and new together into a reconciling law." *William James*

President's Page

THE STATE LEGISLATURE AND MEDICINE

My personal knowledge of the workings within our State Legislature is somewhat scant. During the past month many things have been brought to my attention that make me realize that we in the medical profession must get closer to our State Legislature, as many laws passed affect the over-all health problem of the citizens of our State.

I have been told by members of our Public Laws Committee that the legislators, both in the House and Senate, welcome the Medical Society's viewpoints on any and all bills, concerning health, that are presented to them. In fact, they go out of their way to secure the information. Dr. Allston Morris has accepted the chairmanship of the Public Laws Committee and has gathered an entourage of interested persons, both professional and lay, to help him in keeping abreast of all bills and laws that involve the health of our citizens and the medical profession.

The recent altercation between the Medical Examiner's Office and the Coroner's Office of New Castle County, which ultimately reached the floor of the House and the Senate, points out the need for direct communications with all of our legislators, and the importance of physicians on boards within the State to speak and vote for the wishes of the Medical Society, whom they represent.

The Medical Examiner's system in the State was inaugurated after a long struggle. It was realized that to have an up-to-date, well-qualified system of examining the dead would involve the knowledge of a highly-qualified physician whose specialty should be in the field of regular and forensic pathology. For some time, we have been having difficulty in securing and retaining such a person. Dr. Ali Hameli accepted the position of Medical Examiner fully realizing, as did the Board of Post-Mortem Examiners, that he was a foreigner and had a temporary visa. He satisfied the qualifications that were set forth in the Delaware Code for this job, and as far as is known, has performed his duties in an upright, forthright manner.

The Delaware Goals Committee, commissioned by the Governor to study the entire governmental system in the State, came forth with a recommendation that the Medical Examiner's Office should be retained and the coroner system abolished. When Dr. Hameli was asked his views on this, he, as the Chief Medical Examiner in the State of Delaware, was quoted as favoring the Medical Examiner system and that he felt a considerable amount of money could be saved by the abolishment of the coroner system. This possibly precipitated the altercation that we have found ourselves involved in within the last few weeks, resulting in several attempts to have legislation passed that would not only destroy the Medical Examiner's Office but put a law on the books that would make it quite impossible for this State to keep Dr. Hameli and subsequently, very difficult to hire a replacement. House Bill 197, would give the Coroner a vote on the Board of Post-Mortem Examiners. This, in reality, would be a conflict of interest. The Coroner would be voting on policy which he would have to carry out. The Medical Society felt this was a regressive step toward the old coroner-physician system and opposed the bill. Subsequently, House Bill 347 was introduced which would set the qualifications of the Medical Examiner in such a way that any doctor of medicine, surgery, or pathology would be qualified. The Medical Society also opposed this. The most recent bill, Senate Bill 251, an exact duplicate of House Bill 347, was introduced and one or two days later an amendment was tacked on the bill which would immediately disqualify Dr. Hameli. This amendment stated that the first qualifi-

Delaware Academy of General Practice

THE AAGP CONVENTION

The 1967 Convention of the American Academy of General Practice was highlighted by retaining the present name of the Academy, approval for the CORE report, opposing generic prescribing and the election of Maynard Shapiro, M.D., of Chicago as the President-Elect.

Although the delegates voted 58 to 45 to change the name of the Academy to the American Academy of Family Practice, this vote failed to meet the 2/3 majority necessary to amend the Constitution.

Despite this reverse, the delegates did approve the CORE content report providing steps for the establishment of an American Board of Family Practice. The board will consist of members from the AAGP and members of the AMA section of General Practice; its purpose will be to certify members of the AAGP as fellows of the AAFP if they pass the proposed Board examinations. A survey of the entire Academy membership, conducted just prior to this meeting and reported in the President's address, revealed that 9,000 plus (74.1 per cent) of those answering a questionnaire in May desire to participate in the test for certification. Of these, 8,000 indicate they would be ready to take the examinations in July 1968.

Generic prescribing was firmly opposed by approval of a resolution offered by New Jersey.

President Witten's call for an International Association of Family Practice was referred to the Board of Directors as was Chairman of the Board Kowalewski's proposal for establishing a research center.

A California resolution demanding a review of all Academy group insurance plans by an independent insurance counselor was amended by the Reference Committee on Miscellaneous Business and referred to the Committee on Insurance for its consideration.

Doctor Wendel introduced two resolutions both concerning driving safety. The first recommended AAGP endorsement of driver education programs, the second sought periodic physical examinations for drivers. The former was accepted but the latter was tabled because the Committee on Public Policy to which it was referred did not feel the physician should bear the legal responsibility of deciding who was physically capable of driving.

One of the most important announcements made at the meeting was that by Mac Cahall stating that he was relinquishing the title and responsibility of Executive Director January 1, 1968. He will stay on as publisher of *GP* and *American Family Physician* while continuing to serve as legal counsel. His stated reasons were that he had reached sixty and that he felt it was time to turn over part of his very broad responsibilities to a younger man.

THE STATE LEGISLATURE AND MEDICINE

cation of the Medical Examiner in the State of Delaware would be United States citizenship. Of course, the Medical Society opposed all three of these bills and has instructed the Public Laws Committee to work for their defeat.

As government and medicine become more closely allied, it is the purpose of the Society to keep in touch with all of our legislators, both on the State and National level, to see that laws which are propounded are in the best interests of our citizens.

Daniel J. Preston

Editorials

THE REGIONAL MEDICAL PROGRAM

The Regional Medical Program on Heart, Stroke and Cancer which is slowly getting under way may soon cause some welcome changes, through the simple process of organization. The State of Delaware has always been somewhat divided in its orientation towards Medical Centers. The northern two-thirds of the State including part of Sussex County has looked to Philadelphia while the lower part of Sussex County has referred patients to Baltimore. Although this patient referral system which has evolved is understandable, it is also awkward. There are other statewide programs—such as The State Nursing Association and numerous medical associations, as well as Blue Cross-Blue Shield, and some insurance agencies—that tend to resist the loss of Sussex County.

Another example might be the Delaware Heart Association's Surgical Heart Disease Clinic. This diagnostic and therapeutic program which for many years has been Philadelphia-oriented, was recently forced to make some major changes because of the National Heart Association's policy and pressures. In doing so, the Delaware Heart Association found it necessary to withdraw its financial support for actual patient care in this Surgical Heart Disease Program. Its diagnostic clinic is still supported but Rehabilitation Funds are now used to help support needy adults for the expenses of surgery performed in Philadelphia. However, federal funds for the care of children are available only through a Baltimore-oriented federal program. Therefore, in this State, children who are originally evaluated for surgery by a program connected with Philadelphia must be referred to Baltimore for surgery. Their follow-up then returns them to the Philadelphia-based program.

The above is a clear demonstration of how much confusion and division can be caused by different federal programs. Hope is in sight, however, in the form of the newly created Regional Medical Program for Heart, Stroke, and Cancer. The State of Delaware has been placed in the Greater Delaware Valley Regional Program which is Philadelphia-oriented. It is hoped that pressures will be brought to bear to treat the whole State of Delaware as a single unit in a single program. In doing so, children and adults alike may be diagnosed in the same clinical facilities and referred to the same therapeutic center, in a carefully planned and integrated program. Cancer, stroke, vascular disease, renal disease, diabetes, and eventually, possibly the entire scope of medicine may well be included. Sussex County must decide as the choice will be theirs.

"Medical diagnosis," said Sir William Osler
"is the art of balancing probabilities."

Letters to the Editor

To The Editor:

This letter is addressed to the guest editor of the October issue and his associate editors. Needless to say I was completely surprised and overwhelmed. Such a rare tribute from his confreres makes one feel very, very humble. My purpose in writing, however, is not merely to express my very deep appreciation but to emphasize what seems to me to be the true significance of this Festschrift.

Its preparation I know required much time, enthusiasm and effort on the part of the editors, contributors and other interested former medical residents. The high caliber and diversity of the articles confirms the value of continuous post-graduate education in the practice of medicine. Here is evidence that high type medical care exists in this community. Comparable quality I know, obtains in the other specialties and in general practice. Even so we must all continually strive for improvement even though community medical care here and throughout the country is changing rapidly, becoming more complex and more extensive. In Delaware community rural health is under active study. The Health Facilities Planning Council is rapidly becoming a constructive coordinating and evaluating force. The University of Delaware and the Wilmington Medical Center, in spite of the latter's growing pains, are cooperating in developing medical research and exploring more effective methods of post-graduate medical education including medical school affiliation or establishment. The key to success is a firm basis of dedicated capable physicians. The display of such dedication to good medical practice, as portrayed in the October issue of this Journal, is heartening and encouraging.

Lewis B. Flinn, M.D.

To the Editor:

Through your column I would like to announce the opening of the Crestview Health Maintenance Clinic in the Crestview Apartments at 2700 Market Street, Wilmington. The Clinic is a pilot project established through the cooperative efforts of the Delaware State Board of Health, the Delaware Commission for the Aging, Delaware Heart Association and the Wilmington Housing Authority.

Occupancy in the Crestview Apartments is limited to those 62 years and over whose yearly income is in the low $3000 bracket. The average age is 73 years and there is a total of 183 tenants, 139 of whom are women. Thus the Crestview Apartments have a group of elderly individuals who are caring for themselves and will continue to do so as long as their health permits. From the individual's as well as from the community's viewpoint, it would appear advantageous to maintain such a status as long as possible.

The aims of the project are several: 1. To estimate the morbidity and medical needs in this age group and determine if there are problems in meeting those needs. 2. To aid the medical profession in the often time-consuming problem of caring for this age group by provision of a collection of basic medical data and by proffering them services of such paramedical personnel as a nutritionist and a social worker. 3. To discover if primary and secondary prevention of disease can be accomplished through yearly multiphasic screening and educational efforts.

Participation in the program will be voluntary and each participant will be interviewed. Social information will be sought and a Cornell Medical Index will be completed. Once each year, each individual will have a chest x-ray, EKG, and a complete physical examination. Laboratory studies will comprise: hemoglobin, WBC, hematocrit, BUN, cholesterol and urinalysis. Diabetic, cancer and dental screening examination will be done. Other screening examinations will be added if feasible.

No therapy will be offered and all abnormal findings will be reported to the individual's

Continued on Page 369

The Physician and The Pharmacist

A monthly feature of the Delaware Pharmaceutical Society

DRUG INFORMATION ABSTRACTS*

Hazard Warnings on Proprietaries

Should television and radio stations give time to statements about the hazards of proprietary drugs that would equal commercial time spent advertising these drugs?

This question has been posed in an editorial in the *Journal of the Cleveland Academy of Pharmacy.*

Editor Larry A. Shatten, said he wonders why no one has made "a real clamor for conservatism in the advertising of over-the-counter remedies in the most over-advertised, over-drugged and drug-abused nation in the world." He sees a parallel in the granting of equal time by TV stations to warn of the danger of cigarette smoking.

"We see little merit in the small caution, (of possible side-effects) on a bottle or package insert when the spoken word on TV or radio rarely if ever, describes the hazards involved. If there are contraindications or adverse reactions, shouldn't they be described each time the use of the drug is recommended? Shouldn't full disclosure be mandatory in proprietaries just as it already is with legend drugs?

"While we certainly do not want to raise any unnecessary fears in the mind of the public, we do feel it necessary that we emphasize that caution should be exercised every step of the way and proper warnings, verbal and printed, be given every step of the way.

"With drug reaction cases already representing the seventh highest cause of hospital admission in this country, it would seem self-evident that far more is required to insure the buying public from issue of what some would have us believe are totally innocuous products."

Drug News Weekly, Monday, Sept. 11, 1967, page 6.

Breakthrough Seen Against Viral Ills

A breakthrough in the prevention of viral diseases — including the common cold and certain types of cancer — may be in the offing as a result of the development of substances which can stimulate the body to produce the natural virus-fighting protein, interferon.

Dr. Maurice R. Hilleman and his co-workers at the Merck Institute for Therapeutic Research in West Point, Pa., disclosed recently that they had come up with at least three substances that stimulate the body to produce natural interferon. The work, thus far, has been confined to animal studies — but well-known scientists have shown uncommon excitement over the Merck reports.

Double-Stranded R N A

Dr. Hilleman and his associates discovered that interferon production in the body is triggered by the presence of multi-stranded ribonucleic acid (RNA) that has been freed of its protein coat.

Of 21 mice treated with one of the interferon-inducers 18 or 86% of the animals survived after getting a lethal dose of virus. None of 17 controls survived.

NIH Scientist, Dr. Robert M. Friedman, commented: "If someone comes up with a pill that makes people produce their own interferon, whole populations could be made immune. The medical approach to colds and respiratory diseases would be drastically changed."

Since 1957, scientists around the world have been working feverishly on methods to induce the body to produce protective interferon, when two British researchers — Drs. Alick Issacs and Jean Lindemann — first discovered it.

---

*This is a monthly series of drug information abstracts gathered from current articles and prepared by the pharmacists with the purpose of alerting you on drugs and/or their complications.

They showed that it is a protein produced by the body in response to viral infection and is capable of inhibiting spread of infection by preventing viral reproduction in cells. They were unable, however, to figure out a way to induce the body to produce enough interferon to prevent onset of viral disease.

The trouble with waiting for actual viruses to trigger interferon production is that sometimes the disease overwhelms the individual before enough interferon can be produced by the cells.

Although no tests have yet been performed in man, the excellent results in animals are encouraging the Merck scientists to consider initiation of human tests.

American Druggist, August 28, 1967, page 49.

Causes of Adverse Drug Reactions

The most important single factor as a cause of adverse drug reactions is the number of drugs administered to a patient. This is the finding of a recent study in which were examined factors associated with adverse reactions, such as the number of drugs administered, severity of illness, existence of gastrointestinal disease, history of previous adverse drug effects, presence of infection, renal and liver function. Their findings relative to the number of drugs are shown in the following table.

Table 1— Adverse Drug Reactions

Effect of Total Number of Drugs Administered

No. of Drugs Administ.	Number of Patients	Number of Patients with Reactions	Rate percent
0-5	335	14	4.2
6-10	378	28	7.4
11-15	132	32	24.2
16-20	35	14	40.0
21 +	20	9	45.0
Total	900	97	10.8

Reactions were detected in 13.2 percent of 900 patients hospitalized on a 33-bed semiprivate medical ward during a one-year period.

Patients who received the most drugs and had drugs reactions most frequently were more severely ill, were hospitalized longer and had a higher mortality rate than patients receiving fewer drugs. One patient who had five different reactions received 37 different drugs.

Sedatives and tranquilizers were responsible for a larger percentage of all reactions than other groups of drugs. Although 133 drugs were incriminated in 114 adverse reactions, barbiturates, meprobamate, codeine, penicillins, and thiazide diuretics produced 70 percent of the allergic reactions. These drugs are therefore, very important allergens since they accounted for only 17 percent of the drugs administered.

The overall rate of adverse reactions was significantly increased in the presence of abnormal renal function, but only rates of reactions to certain groups of drugs were effected.

Decreased liver function did not increase the overall rate of adverse drug reactions; but it did slightly increase the rate for certain groups of drugs such as sedatives (phenobarbital and pentobarbital) and tranquilizers (chlorpromazine, promazine, triflouperazine, chlordiazepoxide and meprobamate.) Nine percent of patients without a serious drug reaction acquired one in the hospital. In contrast, 14 percent of patients with a history of previous drug reactions experienced another during hospitalization.

The reaction rate in patients with infection was significantly higher (16.5%) than in those without infection (9.5%). Ten of the 27 reactions in 164 patients with infection were due to antibiotics. Three of the 4 reactions to codeine and morphine occurred in these patients. The incidence of allergic reactions was also greater in this group. It is significant that these patients received an average of 11 drugs, three more than the average for all patients. Furthermore, patients with infections who also had a drug reaction were given an average of 16 drugs.

From this and other reports one may conclude that the incidence of adverse reactions to drugs is grossly underestimated in most hospitals probably because of poor and inadequate reporting systems.

Drug Intelligence, D. E. Francke, Vol 1, July, 1967.

In Brief

The Month In Washington

"The nation's health care system must be improved to assure that quality health care is available to all Americans at a reasonable cost," reported the National Advisory Commission on Health Manpower. It urged a substantial expansion in existing medical schools and continued development of new schools. It advised that, "although the need for more physicians is urgent, the costs and dangers of a crash effort to increase production appear to outweigh the benefits."

The Commission members agreed that tackling the problem of manpower, alone, would not cure present ills. "If additional personnel are employed within the present systems of care, they will not avert, or even alleviate, the crisis," the Commission said.

The Commission's proposals included:

—Federal funds in support of capital or operating costs of education should be provided to a medical school to create economic incentives for the school to expand enrollment while improving its quality.

—The federal government should make available to any medical student loans to cover the full costs of tuition and living expenses during formal professional education. The student should be able to choose between repaying the loan from earnings over a period of years or giving two years of his time to approved national service apart from Selective Service obligations. (Dr. Dwight Wilber (AMA) stated: "I believe the principle is not sound and that the recommendations are impractical, will not serve the purpose intended, and will be largely unacceptable to most students.")

—At a minimum, foreign-trained physicians who will have responsibility for patient care should pass tests equivalent to those for graduates of U.S. medical schools.

—Service with the U.S. Public Health Service should be phased out as a substitute for the military obligation of health professionals.

President Johnson signed a $281 million mental retardation bill with a statement that the nation still is not doing enough to solve the problem. The bill strengthens federal aid for the construction of new facilities for the mentally retarded, and provides for federal licensing of clinical laboratories operating the interstate commerce unless they are run by pathologists, in which case the facilities would have to meet standards set by the American College of Pathologists or the American Hospital Association. Individual physicians operating labs for their own patients would not be affected by the new law.

Pesticide residues in the nation's food supply have remained low for the third consecutive year, according to the FDA's third annual "total diet" study. In the survey, food samples were collected in 30 cities over an 11-month period and were analyzed to identify and determine the level of pesticide residues. Residues were found to have remained well below acceptable daily intake levels established by the WHO and the Food Agricultural Organization of the United Nations.

W.M.C. Symposium

A symposium on *Preparing to Enter Private Practice* was organized by William J. Vandervort, M.D., President of the Delaware Society of Internal Medicine, and held November 29, 1967, for all interested physicians, especially house officers, at the Wilmington Medical Center, Delaware Division. The list of the participants and their subjects follows:

Private Practice vs. Industrial Medicine, Charles Walker, Jr., M.D., *Locating Your Office in New Castle County, Suburbs*: Robert L. Mecklenburg, M.D., *City*: Alfred E. Bacon, Jr., M.D.; *Rent or Build?* Robert L. DeWees, M.D., Mark G. Cohen, M.D.; *On Borrowing Money*, William J. Vandervort, M.D.; *Private Office vs. Hospital Base*, Leonard P. Lang, M.D.; *Group vs. Solo*, Charles S. Riegel, M.D., Allston J. Morris, M.D.; *Subspecialty or No*, Robert B. Flinn, M.D., John Benzel, M.D., William T. Hall, M.D.; *Fees*, Alfred Lazarus, M.D.; *Collection Agency?* G. Barrett Heckler, M.D.

Personal Glimpses

William O. LaMotte, Jr., M.D., participated in the *Medical Bowl TV* Quiz program, sponsored by the AMA, held recently in Houston, Texas . . .

Milford Seminars

These seminars will be held at the Milford Memorial Hospital from noon to 1 p.m., on the second and third Thursdays of each month.

Jan. 11, 1968, William Ferris, M.D., *Obstructive Uropathy in Children.* A discussion of the signs, symptoms and pathogenesis of obstructive uropathy in children, along with the currently recommended treatment.

Jan. 18, 1968, Alvin Weiner, M.D., *Ophthalmologic Problems of General Practice.* A discussion of the most commonly encountered eye problems seen in the daily practice of medicine.

Speakers On "Ask The Doctor"

Speakers for January, 1968, on the Tuesday Radio Program, (11:05 a.m., WDEL) produced by the Medical Society of Delaware are: Jan. 2, Morris Harwitz, M.D., *Arthritis;* Jan. 9, Robert L. Smith, M.D., *Sex Education in Schools;* Jan. 16, Donald Schetman, M.D., *Hair Loss;* Jan. 23, Joseph E. Belgrade, M.D., *to be announced;* Jan. 30, Joseph V. Casella, M.D., *Automation of Hospital Laboratories.*

LETTERS TO THE EDITOR

Continued from Page 365

private physician for further investigation or treatment. A nutritional counsellor and social worker will be on the Clinic's staff and their services will be available to all private physicians.

It is conceivable that individual physicians might desire to carry out certain studies of medical problems in this age group and the clinic staff will be glad to cooperate fully in this regard. In addition, if for any reason a private physician might find it convenient to use the clinic spaces, these will be available to him by appointment.

All services will be offered at no cost to the individual. It is hoped that all physicians will urge their patients, who are residents of the Crestview Apartments, to participate in the programs.

This is indeed a pilot project. Hopefully it can be developed as an aid to both the medical profession and their patients in an effort to maintain this particular group in our community in a state of continuing independence.

Barbara B. Rose M.D., Medical Director
Crestview Health Maintenance Clinic

Auxiliary Affairs

OFFICERS, 1967-1968

President, Mrs. Harold J. Laggner, 123 West Commerce Street, Smyrna, Delaware 19977.

President-Elect, Mrs. Richard Weiss, 1441 Foulk Road, Wilmington, Delaware 19803.

Treasurer, Mrs. Edward O'Donnell, 109 Norris Road, Alapocas, Wilmington, Delaware 19803.

Recording Secretary, Mrs. Edward Dennis, 100 South Queen Street, Dover, Delaware 19901.

Coresponding Secretary, Mrs. Rafael A. Zaragoza, 719 Pear Street, Dover, Delaware 19901.

DIRECTORS

Mrs. John Howard, (1 yr.), 3 Madelyn Avenue, Madelyn Gardens, Wilmington, Delaware 19803.

Mrs. Allston J. Morris, (1 yr.), 2005 Veale Road, Wilmington, Delaware 19803.

Mrs. C. M. Moyer, (1 yr.), 509 South Central Avenue, Laurel, Delaware 19956.

Mrs. Christos Papastavros, (2 yrs.) 100 Augustine Cut-off, Wilmington, Delaware 19803.

Mrs. R. F. Lewis, (2 yrs.), Old Meadow Road, Seaford, Delaware 19803.

CHAIRMEN STANDING COMMITTEES

AMA-ERF—Mrs. John Howard, 3 Madelyn Avenue, Madelyn Gardens, Wilmington, Delaware 19803.

Health Careers—Mrs. Peter Potocki, 101 Westgate Drive, Westover Farm, Wilmington, Delaware 19808.

International Health—Mrs. Thomas McGuire, 212 Delaware Street, New Castle, Delaware 19720.

Mental Health—Mrs. Richard Comegys, Clayton, Delaware 19938.

Safety Disaster Preparedness—Mrs. John J. Lazzeri, 33 Lake Drive, Smyrna, Delaware 19977.

Finance—Mrs. Emerson Gledhill, Burnt Mill Road, Chadds Ford, Pennsylvania 19317.

Archives—Mrs. Douglas Gay, Gayecho Farm, Hockessin, Delaware 19707.

Membership—Mrs. Barrett Heckler, 2625 Longwood Drive, Foulk Woods, Wilmington, Delaware

Parliamentarian—Mrs. Sylvester Rennie, 1201 Delaware Avenue, Wilmington, Delaware 19806.

Publicity—Mrs. F. B. Haines, Horse Pen Road, Felton, Delaware 19943.

Revisions—Mrs. John Baker, 206 North Walnut Street, Milford, Delaware 19963.

Special Reporter—Mrs. Howard Wilk, 622 Black Gates Road, Edenridge, Wilmington, Delaware 19803.

COUNTY PRESIDENTS

New Castle—Mrs. Haynes B. Cates, 803 Westover Hills, Wilmington, Delaware 19807.

Kent—Mrs. William Leitzinger, 838 Monroe Terrace, Dover, Delaware 19901.

Sussex—Mrs. Joseph Elliott, Jr., 714 West Street, Laurel, Delaware 19956.

X68-414

Delaware medical journal.
v.39, 1967.

2-14-68

DATE | ISSUED TO

D. Chemsak

X68-414

Delaware medical journal.
v.39, 1967.

RETURN THIS BOOK ON OR BEFORE LAST DATE STAMPED

'68
JAN 13 '69
JAN 16 '68
APR 14 '76 RET'D APR 22 '76
JUL 6 '76 RET'D JUN 29 '76
FEB 27 '74
RET'D. FEB 26 1974
JUN 25 '75
RET'D. JUN 19 1975
OCT 27 '75 RET'D. OCT 21 1975